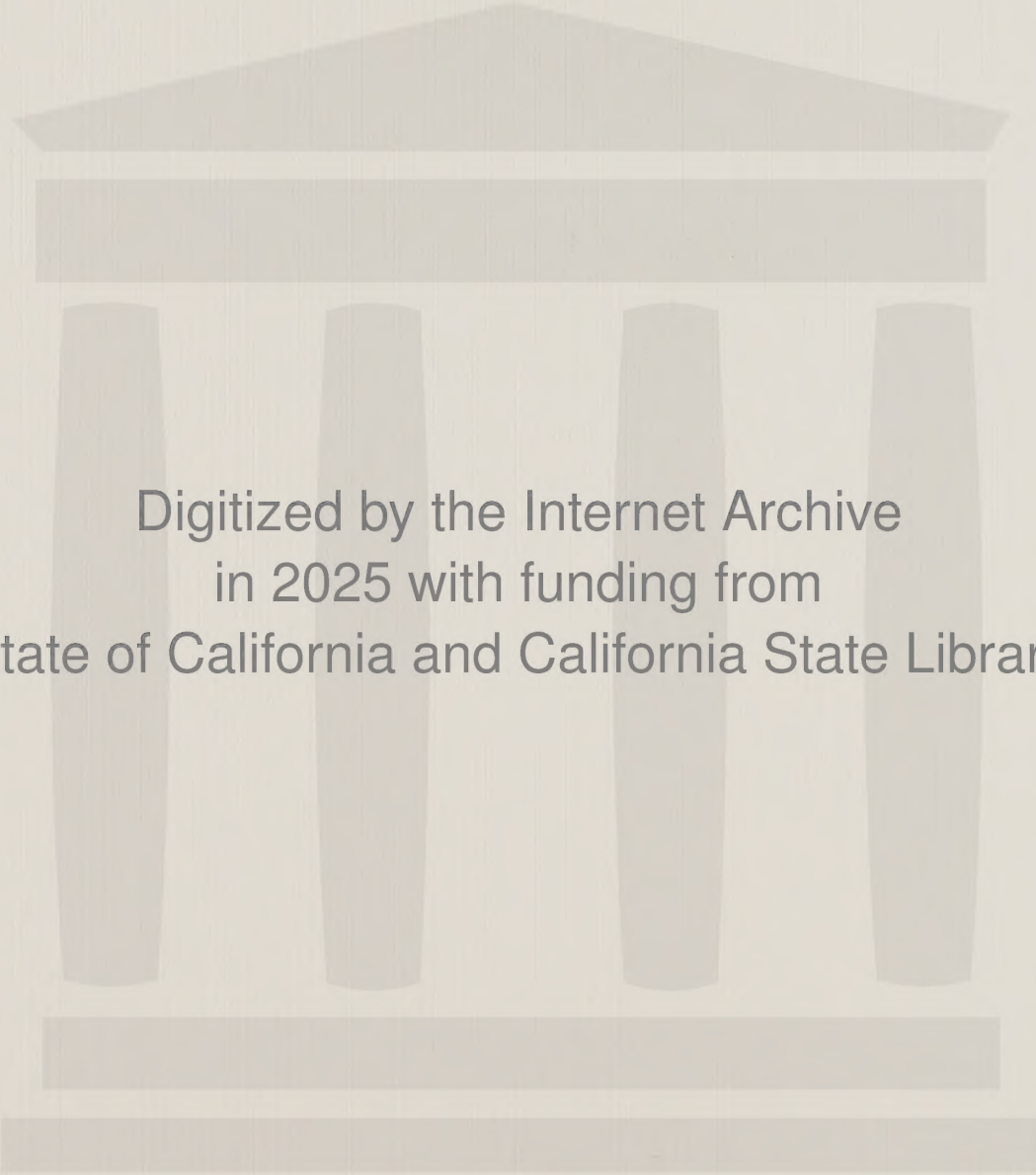




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HERCULES GENERAL PLAN



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HERCULES GENERAL PLAN

(1957)

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I. THE GENERAL PLAN

A. AUTHORITY

Government Code Section 65302 requires a general plan statement as follows:

"The general plan shall consist of a statement of development policies and shall include a diagram or diagrams and text setting forth objectives, principles, standards and plan proposals."

B. BACKGROUND

1. Historical Sketch

The City was incorporated as the Town of Hercules in 1900 and is a general law city of the State of California. The City is governed by a council of five members elected at large.

The "Hercules Site" of the California Powder Works was established in 1879. Originally occupying a site in what is now Golden Gate Park in San Francisco, the company decided to find another location and selected a tract of land in San Pablo Bay which was a part of the former Spanish land grant called Rancho El Pinole. In about 1903, the DuPont company acquired the California Powder Works and thereafter the plant comprised part of the E. I. DuPont de Nemours organization. In 1912, the Hercules Powder Company was incorporated (now know as Hercules Incorporated) and purchased the Hercules, California plant from the DuPont company together with other explosive plants operated by the DuPont company in other states. The Hercules, California plant was the largest producer of TNT in World War I supplying explosives to Great Britain, France and Russia before the United States entered the war.

Several of the houses in the historic district were built prior to 1900, with the majority erected during World War I. In 1902, the Hercules Water Company was formed to supply water to the area between San Pablo and Rodeo. This company operated until 1953 when it became a part of East Bay Municipal Utility District. In 1975, construction of new housing began east of I-80. This marked the beginning of new Hercules. In 1978, Hercules, Inc. sold the plant and ended almost a hundred years of activity in the City.

Development of housing in Hercules, coupled with growth in the unincorporated area of Rodeo and the City of Pinole, made West Contra Costa County one of the fastest growing areas in the 1970's and 1980's.

2. Regional Considerations

a. The Bay Area

The City is located in the western portion of Contra Costa County, one of the nine counties comprising the San Francisco Bay Area. See Figure 1.

The City is in the path of growth in the Bay Area - accessible by freeway to employment areas in West Contra Costa County, Northern Alameda County and the Benicia area. There is a Bay Area Rapid Transit (BART) station in Richmond, nine miles south of Hercules, which provides West Contra Costa County with mass transit service to destinations along the industrial corridor between the cities of Richmond and Fremont and the City of San Francisco. The Union Pacific Railroad runs along the bayfront. The Burlington Northern and Santa Fe Railway runs through the center of Hercules.

The City of Hercules is a planned community which is an extension of an urbanized area already served by major transportation and utility systems. See Figure 2. The plan incorporates open space and conservation areas and provides for improved environmental design. The City has the governmental framework to provide its future citizens with needed urban services.

b. Spheres of Influence

There are 1,365 acres of land outside of the City that has been deemed within the City's sphere of influence by the Local Agency Formation Commission. These areas are indicated in the Land Use Diagram within the Land Use Element.

C. OBJECTIVES AND POLICIES

1. General Plan Objectives

- a. Provide a functional and compatible arrangement of residential, commercial, industrial, public uses and open spaces.
- b. Provide for an economic base capable of supporting adequate community services in future years.
- c. Provide for the movement of people and commodities in the City.
- d. Plan for the preservation and enhancement of visual qualities as viewed from scenic routes.

- e. Provide for both human and environmental needs in creating a natural environment compatible with urban development by the wise use and enhancement of natural resources within the City.
- f. Reduce loss of life, injuries, damage to properties and economic and social dislocations resulting from future seismic, geologic and fire hazards.
- g. Protect the future citizens of Hercules from excessive noise levels which are annoying to the senses and can be detrimental to health.

2. General Plan Policies

- a. The City will be developed as an extension of an urbanizing area with a balance of residential, commercial, industrial and public uses.
- b. Specific plans will be prepared for a neighborhood prior to development within that neighborhood.
- c. Densities shown on the General Plan are flexible and may be modified as neighborhood plans are formulated.
- d. The City will encourage innovation in site planning and design of housing developments to improve livability and effect cost savings.
- e. A major criteria for the design of residential streets will be the number of housing units to be served by that street.
- f. The City will actively participate in cooperative efforts to provide effective public transit to the City and adjacent communities.
- g. The City will promote the establishment of riding and hiking trails throughout the community and coordinate with other agencies in the planning of trail systems in the area and region.
- h. The City will establish a management program for the conservation and enhancement of the natural amenities in the City.
- i. Neighborhood planning will consider potential seismic, geologic and fire hazards and introduce adequate safety measures in development plans and proposals.
- j. The City will consider noise intrusion from major streets and freeways in reviewing plans for new housing developments.

3. The Plan

The General Plan represents a balance of residential, commercial, industrial and public uses as shown in the Land Use Diagram of the Land Use Element.

D. IMPLEMENTATION

1. Preparation and review of neighborhood plans, specific plans, functional plans and other special studies leading to short and intermediate range implementation programs.
2. Review community development ordinances and policies in terms of compatibility with the objectives, standards and policies contained in the General Plan.
3. Review of the capital improvement program in terms of General Plan proposals staging and priorities.
4. Review of development plans in terms of conformity to the General Plan.
5. Enforcement of community development and safety codes to implement the objectives of the General Plan.
6. Coordination with local, State and Federal agencies on General Plan policies and programs of Regional or area-wide interest.
7. Utilization of special assessment districts and other available means of financing capital improvements.

LAND USE ELEMENT

**APPROVED BY THE CITY COUNCIL
SEPTEMBER 22, 1998**

II. LAND USE ELEMENT

The Land Use Element has the broadest scope of the seven mandatory elements. It plays the central role of correlating all land use issues into a set of coherent and consistent development guidelines. Its goals, objectives, policies and programs relate directly to all other Elements. For these reasons, it is the most visible and often used Element of the General Plan. Although all General Plan Elements carry equal weight, the Land Use Element is often perceived as being the most representative of the "General Plan."

The Land Use Element designates the proposed general distribution, location, and extent of land uses for housing, business, industry, open space, education, public buildings and grounds, waste disposal facilities, and other categories of public and private land uses. The emphasis is on the desired or intended future development of the City.

The City of Hercules has updated its General Plan, and has established an overall strategy for its future development and ultimate "build-out". Hercules envisions itself as a balanced community with a sound complement of residential and commercial uses and services. Hercules is a community of families. An important part of our community of families is to provide affordable housing in order that future generations and seniors can remain in the community. It is anticipated that through the implementation of the Land Use Element, up to 2,150 units of housing may be added to the housing stock, bringing the total number of units to 8490 and a total population of 25,100.

Although incorporated in 1900, Hercules was a company town known for its production of dynamite and gunpowder. Hercules experienced tremendous growth in residential population in the 1980's. Hercules, California, continues to be the fastest growing city along the San Pablo Bay coastline. Recognizing its rich history, the City of Hercules has sought to preserve its industrially-based past while changing into a residential community of diverse character. The City resolves to maintain its quality of life while creating a unique blend of old and new with the City's most precious commodity, its people.

The residents of Hercules determine the course of the community and demand fiscal responsibility for the City's future. The primary attributes of this residential city are preservation of open space, less crowding, more trees, less concrete, streets that carry cars safely and quickly; and a community that cares about the well-being of people's lives. Protecting the city's environment places a limit on the ultimate size and growth of Hercules. Building on vacant parcels within the city, development of a city center, and preserving a family-oriented lifestyle where those who live in Hercules are able to work in Hercules, must be planned in order to avoid losing the quality of life we now enjoy.

The commitment to preserving Hercules' past, embodied in its historic structures, is vital to the City's economic future. The economy of the City depends on a successful and healthy business climate with city government working to sustain that climate.

The City has a recognized commitment to various volunteer organizations and cultural activities that provide the services that a diverse citizenry require. Preservation and enhancement of the

natural environment is vital. The residents support and encourage a strong educational system that will continue to equitably share the fiscal responsibility with the County and State for new schools.

The balance among open space, environmental resources, business considerations, and residential needs, as well as the continued provision of high-quality recreational, educational, historical, cultural, civic and religious services will be the key to a well-planned, vital and unified community.

I. INTRODUCTION AND PURPOSE

A. BACKGROUND

The development and use of land in a community can dramatically affect the quality of life in that community for residents and employees. The availability, type and cost of housing helps determine the number of people who live in the community, their relative age, and the relative proportion of school-age children. Access to commercial, retail and employment areas can dictate whether residents spend substantial time commuting to work in other areas or driving to/from shopping areas in other communities. The arrangement of commercial and residential uses can affect whether residents or workers can walk, use bicycles, and public transportation to commute or for shopping trips, or whether they must use private vehicles. Access to parks and recreation facilities can expand the opportunities for use of leisure time. The presence and protection of undeveloped open space can enhance a community's identity and can avoid subjecting residents and businesses to landslides and other hazards. In these ways, and many others, the development and use of private and public property set the "Stage" upon which residents, local workers and visitors live their lives.

B. PURPOSE

The Land Use Element provides long-term direction and guidance to development within the City, including policies, programs and actions for managing the development of private and public property in Hercules. This Element sets forth the goals of the General Plan in regards to development. It is the intent of the Land Use Element that these goals will result in a "full service" community that maintains a desired quality of life, while providing for a wide range of residential, commercial shopping, employment and recreational opportunities.

The Land Use Diagram illustrates the general proposed distribution of the land use categories described in this Land Use Element. The Diagram is intended to serve as a general guide to future land uses. Zoning classifications, consistent with the land use categories, are established for this purpose in the Zoning Ordinance and Zoning Map. The proposed transportation system and policies regarding transportation are addressed in the Circulation Element.

C. AUTHORITY

California law requires cities and counties to adopt Land Use Elements of their General Plans (ref. California Government Code Section 65300 et seq.). Section 65302(a) states that each General Plan must include):

"A Land Use Element which designates the proposed general distribution and general location and extent of the uses of the land for housing, business, industry, open space, including agriculture, natural resources, recreation, and enjoyment of scenic beauty, education, public buildings and grounds, solid and liquid waste disposal facilities, and other categories of public and private uses of land. The Land Use Element shall include disposal facilities, and other categories of public and private uses of land. The Land Use Element shall include a statement of the standards of population density and building intensity recommended for the various districts and other territory covered by the General Plan. The Land Use Element shall identify areas covered by the General Plan which are subject to flooding and shall be reviewed annually with respect to those areas."

The Land Use Element is divided into four main sections. They are as follows:

- Land Use and Projections
- Land Use Issues and Concerns
- Land Use Goals, Objectives and Policies
- Land Use Plan

While the general character of the City has been established by past land use decisions, there are many such decisions to be made in the future which must recognize and protect the existing character of the community, as well as provide a balance of new land uses to assure maintenance of the quality of life aspects sought by Hercules and to maintain economic viability.

II. LAND USES AND PROJECTIONS

A. BACKGROUND

Hercules began as a company town, and was incorporated in 1900 to allow the powder company to control the land around the plant facilities. In 1964, production of fertilizer replaced the production of dynamite and black powder. In 1974, the fertilizer operation ceased, and Hercules, Inc. began selling the plant property to developers.

In 1974, Hercules had approximately 150 residents. By 1993, the number of residents had grown to 18,618. This explosive growth created a modern suburban community that included four convenience shopping centers and two employment centers. However, development of the commercial and employment areas did not keep pace with the residential growth, and did not fulfill the vision of a balanced community. In order to rectify this situation, the City Council gave priority to commercial and employment development that could help maintain the quality of life in Hercules. In 1993, a citizens task force ("Community Panel") evaluated and recommended a new land use concept that responds to this emphasis. This concept is incorporated into this revised Land Use Element.

B. LAND USES

Most of the residential portion of Hercules has been developed, while much of the commercial and employment areas remain vacant. The following is a summary of the existing and projected development, as well as key issues and agencies that impact the community.

1. Residential

According to State Department of Finance projections, on January 1, 1995, Hercules had a population of 18,900 in 6,345 condominiums, apartments and houses. While the proportion of condominiums in Hercules has increased since 1980 as a number of new condominium developments were built, most residents live in single family homes. According to the 1990 Census, most City residents own their residence; 92% of the housing units are owner occupied.

2. Employment, Retail and Services

Businesses in Hercules provide relatively few jobs or shopping and service opportunities. Most residents must commute to work and drive to shopping areas. The amount of employment grew only slowly during the 1980's and did not keep pace with the residential growth. According to the Association of Bay Area Governments, in 1990 Hercules had about 2,430 jobs; major employers included Bio-Rad Laboratories, West Contra Costa Unified School District, and Mechanics Bank. At the same time, Hercules had 9,431 employed residents¹. Even if Hercules residents held all these jobs, about 7,000 residents would have to commute outside the City to work. In actuality, probably almost all employed residents out-commute to work.

Retail businesses in Hercules provide a limited range of shopping and service opportunities, which include food, drugs, video rentals, and other "convenience" goods. However, most of the residents must leave Hercules to shop for goods and services beyond these basic essentials.

3. Public and Semi Public

Schools: Hercules is served by two school districts: West Contra Costa Unified School District (WCCUSD) and John Swett Unified School District (JSUSD). The Foxboro area (east of I-80 and north of SR 4) is in the JSUSD, and WCCUSD serves the rest of the City. At present WCCUSD operates three elementary schools. Historically, some WCCUSD students have attended elementary school in Pinole; with WCCUSD's establishment of new school attendance boundaries and the opening of the community's third elementary school it is expected that all WCCUSD elementary students may be able to attend school in Hercules. All JSUSD Hercules elementary students attend Hillcrest Elementary School in Rodeo.

At present, WCCUSD Hercules students attend middle and high school in Pinole. WCCUSD has begun construction of a combined middle/high school in Hercules. It is intended that all

¹Employed residents: persons living in Hercules who work outside the home.

WCCUSD Hercules students will attend the combined school when it is completed . JSUSD Hercules students attend middle and high school in Crockett.

City: The City Administrative Offices are located in the Civic Center, on the west side of Sycamore Avenue, east of the Creekside Shopping Center. The Civic Center site also includes the Senior Center and a temporary office building that is leased to the Chamber of Commerce.

The City owns and operates a 375,000 gallon per day wastewater treatment plant that is located west of the intersection of San Pablo and Sycamore Avenues. Additional City treatment capacity of 2.0 million gallons per day is provided at the Pinole-Hercules Treatment Plant, which is located at the west end of Tennant Avenue in Pinole. The City will need to provide additional capacity to serve development anticipated under the adopted General Plan.

Parks: The City of Hercules has one community park, the 55-acre Refugio Valley Park, four neighborhood parks, and two mini parks. Refugio Valley Park consists of Refugio Lake and associated facilities at Refugio Valley Road and Pheasant Drive, and a linear park along the north side of Refugio Valley Road. A separate community/swim center is located along Refugio Valley Road. A new park of 26 acres is proposed along the San Pablo Bay waterfront adjacent to the existing East Bay Regional Park District lands. No schedule has been established for development of the proposed waterfront park. Additional information, maps and tables regarding parks and open spaces are presented in the Open Space/Conservation Element.

The neighborhood and mini parks include Ohlone Park, on Turquoise Drive adjacent to Ohlone School; Woodfield Park, on Lupine Road adjacent to Hercules Elementary School; Foxboro Park, on Canterbury Drive; Railroad Mini Park, a play area on Santa Fe Avenue; and Beechnut Mini Park, on Beechnut Court. A new neighborhood park, Hanna Park, is adjacent to the Hanna Ranch School at the east end of Refugio Valley Road. A multi-purpose, ballfield (for baseball/softball and soccer) occupies six acres of the community park. The remainder of the Hanna site is planned for future development. A city-owned site in the Forest Run neighborhood just west of I-80 is designated as a neighborhood park. This park will be developed for passive recreational use with facilities such as a walking path, benches, and picnic tables. In addition to the neighborhood parks, the Heritage Gardens is located on Sycamore Avenue frontage of the Civic Center.

Existing multi-purpose ballfields in Hercules, at Ohlone, Woodfield and Hanna Parks, are being used to capacity by youth sports leagues. The Pinole-Hercules Little League is actively seeking a site of approximately 7 acres to relocate its existing fields.

Utilities: Pacific Gas and Electric (PGE) maintains an electricity substation along Bayberry Avenue (east of the I-80 off-ramp) and owns a 44-acre site between I-80 and San Pablo Avenue, north of John Muir Parkway, that contains four oil storage tanks, an underground pipeline and a pump station. The Circulation Element describes the underground pipelines that traverse the City. All utility services to residences and businesses are provided in underground mains, cables and lines.

State Agencies: CalTrans operates a maintenance yard on Bayberry Avenue (east of the I-80 off-ramps and the PGE substation). The Bay Area Rapid Transit District owns a seven-acre site bounded by I-80, Sycamore Avenue, San Pablo Avenue and John Muir Parkway that is developed with a transit / transfer center. The relationship between this transit center and the local and regional circulation network is discussed in the Circulation Element.

4. Agricultural and Natural Resource Lands

The incorporated area of Hercules includes no land used for agricultural purposes or containing significant natural resources. The upland portion of the Franklin Canyon Golf Course property was used seasonally for grazing cattle in the past, but this use was discontinued before the property was annexed. Indian midden sites have been identified in some of the developed areas of the City. These sites generally have been left undisturbed, with the site and the surrounding area designated as open space. In cases where preservation-in-place has not been possible, the archaeological resources in these sites have been recovered before the area has been developed.

Some of the properties in the Sphere of Influence are used seasonally for grazing cattle. One property is under an agricultural preservation contract (Williamson Act). Although the owner has filed a notice of non-renewal for the contract, pursuant to State law, this contract will expire in 2001.

The State of California adopted the Surface Mining and Reclamation Act of 1975 (SMARA) with a recognition that the extraction of minerals is essential to the continued economic well-being of the state and to the needs of society, and that the reclamation of mined lands is necessary to prevent or minimize adverse effects on the environment and to protect the public health and safety. Where significant mineral resources are identified and designated, SMARA requires local agencies to prepare and adopt mineral resource management policies as part of the jurisdiction's General Plan. These policies 1) recognize mineral information classified by the State Geologist, 2) assist in the management of land use which affects areas of statewide and regional significance, and 3) emphasize the conservation and development of identified mineral resources. Before their adoption, local jurisdictions must submit these policies to the State Mining and Geology Board for review and comment.

There are no significant mineral resources in Hercules as identified by the state. However there are some areas that may have potential for mineral resources, but insufficient information exists. Mineral resources and mineral resource management policies are addressed within the Open Space and Conservation Element.

5. Areas Subject to Flooding

Refugio Creek traverses the City from southeast to northwest and drains much of the community; the southwest corner of the City drains to Pinole Creek, and, the Franklin Canyon Golf Course property and the Sphere of Influence properties are drained by Rodeo Creek. As each neighborhood and subdivision was developed, flood control improvements were

constructed to eliminate flood hazards. As a result, areas subject to flooding by a 100-year storm are limited to creek channels and adjoining open space corridors, with one exception. The portion of the Refugio Creek basin that is west of San Pablo Avenue has not been developed, and a substantial portion of that area is subject to flooding. The Safety Element describes and maps these areas and provides policies so that the areas shall not be developed until flood control improvements are made to eliminate flood hazards. The Zoning Ordinance includes a Special Flood Hazard Overlay District and the Municipal Code contains a Flood Damage Prevention ordinance to implement the flood hazard policies of the General Plan.

Rodeo Creek runs along the Franklin Canyon Golf Course property and the south side of Willow Avenue. Limited portions of the golf course immediately adjacent to Rodeo Creek are subject to flooding. Rodeo Creek also causes flooding on the south side of Willow Avenue and areas downstream in the Sphere of Influence.

6. Areas Subject to the San Francisco Bay Conservation and Development Commission (BCDC) Jurisdiction

The shoreline area of Hercules is subject to the policies and regulations of the Bay Conservation and Development Commission (BCDC) as set forth in the San Francisco Bay Plan. The purpose of BCDC and the Bay Plan is the protection and conservation of the San Francisco Bay and its shoreline as a valuable natural resource. Under the state-legislated authority of the McAteer-Petris Act (1965 as amended), BCDC has regulatory permitting power within the shoreline areas in its jurisdiction. BCDC jurisdiction is defined as the band of land 100 feet shoreward from the line of highest tidal action, and in specified tributary creeks. BCDC priorities are generally for water-related projects that propose minimum fill and maximum feasible public access.

In Hercules, BCDC has shoreline jurisdiction 100 feet inland of the high tide line, estimated to be 6.2 feet NGVD normally as far as the Union Pacific grade, and Bay jurisdiction over the adjacent Bay waters and tidelands. In addition, BCDC also has advisory policies relating to activities in diked historic baylands, of which there is extensive acreage along the bayfront. BCDC reviews development proposals in diked historic baylands for consistency with their policies and submits its comments to the U.S. Army Corps of Engineers for their consideration.

Any development proposed within BCDC's jurisdiction requires a permit from BCDC. Permits are granted or denied only after public hearings, and review and comment by the affected local jurisdiction. In its permit process, BCDC tries to ensure the following: 1) that prime shoreline sites are reserved for priority uses (i.e., ports, water-related industry, airports, wildlife refuges, and water-related recreation); 2) that public access to the Bay is maximized and not precluded by development in areas not needed for priority uses; 3) that attractive design of shoreline development is encouraged; and 4) if salt ponds or managed wetlands are proposed for development, that consideration be given to dedication of these lands or that development be consistent with Bay Plan guidelines. The land use maps in the Bay Plan previously designated the Hercules Properties, Inc. site as a priority use area for

water-related industrial uses. However, in 1988, the Commission removed the priority use designation from this parcel. The parcel is now subject to more general BCDC policies to increase access to the Bay, not to adversely affect the public's enjoyment of the Bay and its shoreline, and to encourage attractive shoreline development. Development within the Hercules Point area would require review by the BCDC Design Review Board and the Commission's approval of a development permit prior to any construction in addition to the City's review and approval process.

7. Solid and Hazardous Waste Facilities

Solid Waste: Richmond Sanitary Service (RSS) currently provides solid waste collection service in Hercules through a franchise with the City for collecting and disposing of waste from residential areas; services are provided by contract with individual non-residential customers.

Solid waste from the City of Hercules is trucked to the West Contra Costa Sanitary Landfill in Richmond, which is expected to close in 1997. Following closure of the West Contra Costa Sanitary Landfill, solid waste will be taken to an integrated resource recovery facility for transfer to the Potrero Hills Landfill in Solano County or the Keller Canyon Landfill in central Contra Costa County. Both landfills have built-in growth factors to accommodate future waste generated in the City.

As required by State legislation (AB939), each local agency is responsible for implementing a variety of programs in order to divert 25 percent of its solid waste from landfill sites by 1995 and 50 percent by 2000. To comply with AB939, the City of Hercules has adopted a Source Reduction and Recycling Element (SRRE). The City's SRRE includes a residential curbside recycling program conducted by Richmond Sanitary Service. Receptacles have been provided to single-family residential customers to recycle glass, plastic and newspaper. The SRRE also contains source reduction and composting goals to year 2000.

Hazardous Waste: The management of hazardous wastes generated within the City is addressed by the Hazardous Waste Management Plan which is an element of the General Plan. The Hazardous Waste Management Plan also identifies Bio-Rad Laboratories, Mechanics Bank of Richmond Operation Center and the Caltrans District 4 Maintenance Yard as generators of hazardous waste. Detailed information on these facilities and other small quantity generators is presented within the Hazardous Waste Management Plan.

C. PROJECTIONS

The Association of Bay Area Governments (ABAG) prepares population and employment projections for cities and counties in the nine-county Bay Area. ABAG research was used as a comparative reference for projections performed by the City of Hercules in formulating this Land Use Element; however, local growth considerations and potential development trends were key factors in determining the projections and land use recommendations contained herein. The figures

below indicate an aggressive development effort by the City consistent with City policy as embodied in the Economic Development Element.

By 2010, Hercules' population is projected to increase to 26,300, and the number of jobs in Hercules could grow to 18,575 consistent with the proposed changes to the Land Use and Circulation Elements. In general, the City's population is expected to grow through 2010, approximately equaling the growth rate for the County and slightly above the rate for the Bay Area. However, development trends are ever-changing and it is important to stress the optimal economic development characteristics of Hercules at the juncture of Highway 4 and Interstate 80. Thus, City staff analysis anticipates sizable population and employment growth as evidenced above. In 2010, Hercules is expected to continue to have substantially more employed residents than local jobs and most residents will continue to commute to work.

Table 2-1 shows the existing and the projected student population upon buildout of the General Plan. The increase is expected to occur through the addition of approximately 2,150 housing units on vacant land within the City as allowed under the General Plan.

TABLE 2.1: EXISTING AND PROJECTED SCHOOL POPULATION

Schools	Existing Enrollment	Buildout Enrollment
Elementary Schools	1,565	2,407
Middle Schools	424	606
High Schools	809	1,295
TOTALS	2,798	4,308

Source: City of Hercules General Plan Land Use and Circulation Elements Update and Redevelopment Plan Amendments Environmental Impact Report, 1996; and Hercules Student Enrollment, West Contra Costa Unified School District, Dec. 1997.

III. LAND USE ISSUES AND CONCERNS

This Land Use Element is intended to respond to and address a number of community issues and concerns in order to achieve the General Plan goals. The issues and concerns are as follows:

- Development of the commercial and employment areas has lagged behind the residential growth, resulting in a community that has not achieved a balance between jobs and housing;
- Lack of retail and service opportunities requires residents and local employees and businesses to shop outside the City;
- Most residents must drive out of the community to reach employment or recreation areas;
- Substantial regional traffic on I-80, SR 4 and San Pablo Avenue creates the opportunity to develop local and regional commercial uses;
- Refugio Creek provides a major environmental amenity for both adjoining properties and the community;
- State law requires the City to allow development of new residential units and areas as part of meeting the regional need for additional affordable housing;
- The City's location in the Bay Area provides both a high quality living environment and close access to regional shopping and cultural attractions, and accordingly the City needs to help solve regional problems and issues;

- If not controlled, vehicular traffic and other off-site effects from employment and commercial areas could impact existing residential neighborhoods;
- The land use plan and the circulation system need to be closely coordinated. In particular, traffic from new development should not overwhelm the carrying-capacity of the circulation system.

As noted, important issues have been recognized in the community. First, the land use goal is to accomplish a "balanced mixture" of activities and uses. Diversity means that the City can accommodate change over time. Since Hercules is primarily residential now, achieving balance means that an emphasis will be placed upon attracting commercial, office and industrial uses.

IV. LAND USE GOALS, OBJECTIVES, AND POLICIES

A. GOALS

The goals of the Land Use Element are:

Preserve and enhance the community's quality of life with well-balanced growth and development.

Enhance and create a community with a wide range of choices, services, and amenities.

The Land Use Element is guided by four major concepts. The concepts are as follows:

- 1) Extending the linear park along Refugio Creek westward from San Pablo Avenue to San Pablo Bay. The creek corridor in the eastern portion of the City provides a major amenity, and extending the corridor to the Bay would provide a similar attraction in the western portion of the City. It would also establish the creek corridor as a major urban design element for the entire community.
- 2) The junction of two major state highways offers major opportunities for retail development. Land near the I-80 and SR-4 interchange and along SR-4 should be designated for general commercial use.
- 3) New businesses, and the resulting jobs and business opportunities, can most easily be accommodated at the vacant property between the commercial area noted in #2 above, and the existing employment areas.
- 4) A limited amount of new residential development should be allowed on vacant properties that adjoin existing neighborhoods and that are more closely associated with these neighborhoods than the employment or commercial areas. Buffers should be established between the residential and non-residential areas.

B. OBJECTIVES, POLICIES AND PROGRAMS

OBJECTIVE 1

Achieve a level of population and employment which preserves and enhances the desired character of the community.

Policy 1A

Encourage and only allow development that is consistent with the Land Use Diagram, Land Use Categories; and objectives, policies and programs of the Land Use Element.

Program 1A.1

Procedures to evaluate development applications for consistency with the Land Use Diagram, Land Use Categories; and objectives, policies and programs of the Land Use Element shall be incorporated into the application review procedures of the Zoning Ordinance. Applications shall also be evaluated in relation to the capacity of infrastructure and schools to serve the proposed development.

OBJECTIVE 2

Develop a community that balances housing, jobs, and commercial opportunities.

Policy 2A

Commercial and industrial development shall be consistent with gross intensity ranges in the Land Use Diagram and Land Use Categories. Higher intensity may be considered if such development is consistent with the City's goals and policies. However, each project with a proposed higher density would be subject to site-specific environmental analysis to determine incremental impacts.

Program 2A.1

The Zoning Ordinance shall be updated and amended to incorporate the new density standards into the commercial and industrial zoning districts.

Policy 2B

Develop non-residential Land Use Categories which reduce the need for residents to leave the community by providing a variety of shopping and service opportunities.

Program 2B.1

Target selected retail, service and employment opportunities that will meet the needs of the residents and develop a marketing program to attract these targeted opportunities.

Policy 2C

Emphasize employment-generating development, which is lagging behind residential development.

Program 2C.1

Implement the Economic Development Strategy and conduct a periodic assessment of the effort and results.

Program 2C.2

Develop the necessary financial and non-financial tools to be used to locate commercial and employment-generating development and to provide incentives where appropriate. When incentives are provided, the City and/or Redevelopment Agency may seek a financial return on such incentives (e.g. loans, equity position, etc.).

Program 2C.3

Give favorable consideration to the following types of development: new retail development that would generate substantial new sales, businesses that would provide substantial living wage employment, high growth technical businesses (particularly bio-tech, flex office and incubator uses), health care services, restaurants and innovative mixed use development proposals.

OBJECTIVE 3

Ensure the provision of public facilities and services needed to support growth that balances jobs, commercial, and housing opportunities, and also protects the quality of life in the community.

Policy 3A

Develop transportation facilities to provide access to the region, particularly public transit systems (buses, ride sharing, rail transit, as well as potential over-water transit).

Program 3A.1

Provide assistance and support a regional rail transit system and seek funding for a train station in Hercules.

Program 3A.2

Work with WESTCAT to develop both short-term and long-term transit facility uses on the WESTCAT site in Hercules including commercial-retail uses or rail line extensions.

Program 3A.3

Analyze the existing public facilities and services compared to those needed to be developed as provided for in this Element. Develop a plan to meet the public facility and service needs, including a financing plan.

Program 3A.4

Provide assistance and support for the construction of Highway 4 to full freeway standards through pursuit of its designation and funding within the regional and state transportation plans.

Policy 3B

The Land Use Element and Circulation Element need to be closely coordinated to insure that traffic from new development will not overwhelm the carrying capacity of the circulation system.

Program 3B.1

The planning and development of commercial and industrial areas should evaluate and minimize the effects on existing residential areas.

Policy 3C

Reasonable traffic flow and direct access between neighborhoods should be provided or preserved, where feasible.

Program 3C.1

The development review committee or public works department shall review all development applications for reasonable traffic flow and direct access between neighborhoods.

Policy 3D

Create a strong and successful focus or center for business and activities that would provide services, shopping opportunities which would attract employees, clients, and patrons from a regional area, while not disturbing existing residential and community oriented areas.

Program 3D.1

The City will implement its adopted Economic Development Strategy to attract businesses and development that will provide needed services, shopping and employment.

OBJECTIVE 4

Develop sufficient employment and commercial tax generating uses to maintain a positive City government fiscal condition.

Policy 4A

Encourage local and regional commercial uses that can benefit from substantial regional traffic on I-80, Highway 4 freeway, and San Pablo Avenue.

Program 4A.1

The City will implement its adopted Economic Development Strategy to attract appropriate commercial development and uses that have markets oriented to the high volumes of regional traffic.

Policy 4B

Encourage uses that bring additional revenues (retail sales, property tax) either directly or indirectly to the City.

Program 4B.1

Analyze the City's retail sales and property tax generation, as compared to Regional and State averages, and identify and target those sectors where the City is underserved.

OBJECTIVE 5

Develop and maintain a pattern of residential land uses which provide for a variety and balance of densities and opportunities for a mix of dwelling and residential type.

Policy 5A

Residential development shall be consistent with gross density ranges in the Land Use Categories and with the Land Use Diagram.

While a goal of the City is to limit total residential growth to that which would result from development of all parcels at the mid-range density, architectural diversity and economic variety are also equal goals of the City. The density of residential development allowed on any parcel within the City should take into consideration these City-wide goals as well as site specific considerations

including but not limited to, topography, economics, neighborhood compatibility, provision of affordable housing, market conditions; and the capability of a proposed development project to further other specific goals, policies and objectives of the General Plan.

Program 5A.1

The Zoning Ordinance shall be updated and amended to incorporate the new density standards into the residential zoning districts and site-specific consideration standards for Planned Development Plans. The standards for development within the corresponding residential zoning districts shall address the preference for mid-range densities while balancing the equal goals of architectural diversity and economic variety.

Policy 5B

State law requires the City to allow development of new residential areas and units as part of meeting the regional need for housing.

Program 5B.1

Review on a periodic basis the affordable housing needs identified in the Housing Element and encourage provision of housing to meet those needs.

Program 5B.2

Encourage development of innovative types of housing, including co-housing, congregate care facilities, and other types of housing that may provide low cost alternatives to typical market-rate housing.

Program 5B.3

New residential development shall include a minimum 10% of the total number of units for affordable housing. No in-lieu fees will be accepted by the City unless the developer can establish extraordinary circumstances for not providing affordable housing or unless an agreement pre-dating this general plan amendment provides otherwise. Provision of actual inclusionary housing units will be strongly preferred over the payment of in-lieu fees.

Policy 5C

Provide additional affordable and/or senior citizen housing.

Program 5C.1

Develop an affordable housing strategy which includes an inclusionary requirement of providing a minimum of 10% of the total residential units for affordable housing, an

implementation plan and financial and non-financial incentives for the development of such housing.

Program 5C.2

Encourage the development of a “silent second” mortgage program as a strategy to assist first-time homebuyers, providing affordable homeownership options.

OBJECTIVE 6

Provide residential neighborhoods with a variety of cost ranges disbursed throughout the City.

Policy 6A

Larger scale residential development should, within its land use designation and density range, include a mix of dwelling types while preserving the existing natural topography where feasible.

Program 6A.1

The residential district and Planned Development Plan sections of the Zoning Ordinance shall be updated and amended to allow for a mix of dwelling types within larger scale residential developments and to preserve natural topography.

Policy 6B

Multi-family residential land should be developed with a balance of open space, landscaping, and recreational amenities and should be accessible to commercial and recreational areas and public transportation.

Program 6B.1

The multiple-family residential district and Planned Development Plan sections of the Zoning Ordinance shall be updated and amended to provide standards for provision of and access to open space and recreation, while also providing access to commercial facilities and transit.

Policy 6C

Wetlands mitigation, flood control improvements and riparian corridors should not be used in the calculation of required park space, parks, or recreational areas. However, the City may accept such areas in the calculation of required park space if they are accessible to the general public for use and enjoyment.

Program 6C.1

The Zoning Ordinance open space and recreation standards shall be amended to allow the area of wetlands mitigation, flood control improvements and riparian corridors to be calculated toward open space and recreation requirements at the City's discretion and only if they are accessible to the general public.

OBJECTIVE 7

Achieve a pattern of development that is consistent with the City's desired image.

Policy 7A

Establish a visual identity for the City that distinguishes it from the surrounding areas.

Program 7A.1

Provide landscaping along major regional streets and highways. This landscaping should soften the appearance of traffic and parking along these routes, while allowing view corridors to retail and other businesses.

OBJECTIVE 8

Preserve Hercules history while developing its future.

Policy 8 A

Preserve and enhance the historic district area.

Program 8A.1

Develop plans to preserve and rehabilitate key historic buildings but not the former plant equipment and manufacturing structures related to former industrial sites.

Program 8A.2

A detailed study of the Historic Town Center and adjoining area (including Hercules Point) shall be prepared as part of the Planned Development application for properties within this area in order to define the appropriate mix of public and private land uses, design guidelines, preservation of key buildings, vegetation (e.g. trees) and trails.

Program 8A.3

Designate the Hercules Properties, Inc. parcels as a "special study area" requiring a "planned development" for mixed use and residential development. The planned development plan shall address:

- Historic significance and existing historic buildings.
- Opportunities for and location of commuter rail station.
- Drainage and hydrology issues.
- Bay frontage location.
- Diversity of land uses.
- Coordination with adjacent properties needed due to diversity of land uses and complex infrastructure requirements.

The Hercules Properties, Inc. parcels may be developed differently from the conceptual land uses depicted in the Land Use Diagram.

Program 8A.4

All residential property within the "southern slope" PUD will be either Single-Family Medium Density (7-12 units per acre) or Multi-Family Low Density (7-12 units per acre); a combination of product types is acceptable within the stated density range.

Program 8A.5

Parcel C, the Citation property, will be designated as a Residential Planned Development due to its physical characteristics and proximity to existing neighborhoods and the "southern slope" PUD of the HPI site.

OBJECTIVE 9

Promote attractively designed and economically feasible development.

Policy 9A

New development shall be planned and developed in a manner that funds or mitigates costs for providing municipal services. New residential development shall not create new unfunded costs for providing municipal services.

Program 9A.1

Fiscal impact reports shall be required with all applications for new development. The development review committee shall consider economic feasibility as a factor, within the framework of the General Plan, in evaluating development applications.

Program 9A.2

Development approvals shall be conditioned as part of application approval or a development agreement to provide adequate measures, including formation of necessary assessment districts or other financing mechanisms, to ensure that the development funds all new costs for services required to serve the development. (See also development implementation policies and programs in the Growth Management Element.)

Program 9A.3

Development applications shall be reviewed to determine if adequate solid waste disposal capacity exists to serve the project and that the project includes adequate recycling facilities.

OBJECTIVE 10

Provide recreational and cultural amenities within the community that meet the needs of the residents and workers.

Policy 10A

Promote development of a regional commercial recreation center or complex along, or adjacent to, the major transportation routes (I-80, Highway 4 freeway, and San Pablo Avenue).

Program 10A.1

The City will implement its adopted Economic Development Strategy to promote a regional commercial recreation center that is conveniently accessible to the major transportation routes.

Policy 10B

Create places for residents and workers in the community to meet and socialize.

Program 10B.1

The residential district and Planned Development Plan sections of the Zoning Ordinance shall be amended to incorporate standards for community centers and recreation facilities in larger scale developments.

OBJECTIVE 11

Participate and cooperate in regional and sub-regional planning activities.

Policy 11A

Cooperate with appropriate jurisdictions and/or agencies in preparation of State Mandated Regional Plans (e.g., Congestion Management and Source Reduction and Recycling Element).

Program 11A.1

Continue participation in regional transportation and solid waste management agencies.

Policy 11B

Participate in regional and sub-regional planning and traffic issues to better address the potential regional impacts upon the community.

Program 11B.1

Continue joint power agreements and participation with Contra Costa Transportation Authority, and the West Contra Costa Transportation Advisory Committee.

OBJECTIVE 12

Attain new development with residential and employment mixed uses.

Policy 12A

Encourage mixed use development that provides for an integrated mixture of residential and employment generating uses within the same structure.

Program 12A.1

Update and amend the Zoning Ordinance to include districts for mixed residential and employment uses that correspond to the Land Use Element, and allow for employment and residential uses within the same structure.

OBJECTIVE 13

Attain compatible land uses within existing and planned development areas.

Policy 13A

Create a transition between residential neighborhoods and commercial/industrial areas, except where such mixed uses are desirable (e.g. live/work space and other designated areas). Land uses must minimize adverse impacts, and those that would not negatively impact adjoining properties should be encouraged.

Program 13A.1

Amend the Zoning Ordinance to provide standards for location, buffering and mitigation of land uses that might be incompatible if located in close proximity.

Policy 13B

Design of flood control improvements along Refugio Creek should be coordinated with appropriate resource agencies and done in a manner to function as a transition area between land uses.

Program 13B.1

Amend the Zoning Ordinance to incorporate a Refugio Creek Overlay District that provides standards for improvements along the creek and its tributaries.

Policy 13C

Strongly encourage cooperation and joint planning by and among owners of large parcels during the land use planning and entitlement process; this effort would include such items as master hydrology and circulation plans, joint studies and cooperative infrastructure development. In particular, it is anticipated that development of Parcel C and the "southern slope" portion of the HPI site will be the subject of a joint planned development process.

Program 13C.1

Coordinate preparation of the Planned Development study for the lower Refugio Valley.

OBJECTIVE 14

Protect and enhance significant and desirable environmental attributes and features.

Policy 14A

Develop trail systems, open space, and other amenities that benefit the quality of life in the community.

Program 14A.1

Establish a strong and continuous system of trail links between the hills in the southeastern end of Refugio Valley and San Pablo Bay.

Program 14A.2

Establish a trail linkage between Pinole and Rodeo as part of the regional bay access trail; this trail may encroach upon private property or bluffs within the Hercules industrial area.

Program 14A.3

Continue to improve and protect Refugio Creek as a major environmental amenity.

Program 14A.4

Require a minimum 50 ft. setback between development and the "top of bank" of the lower Refugio Creek and Rodeo Creek corridors, except that the setback may be reduced for the west branch of Refugio Creek if the 50 ft. setback proves infeasible. This buffer will be included as part of any enhancements required by regulatory agencies or proposed by the developer. Riparian areas which are culverted or underground will be excluded from the buffer requirement.

Policy 14B

Preserve the existing natural topography, ridgelines and valleys where feasible and desirable.

Program 14B.1

The City will amend the Zoning Ordinance to provide standards and review procedures to promote preservation of existing natural topography, ridgelines and valleys.

OBJECTIVE 15

Provide for public, semi-public and non-profit uses and activities throughout the community.

Policy 15A

Public, semi-public and non-profit uses may be allowed in commercial and industrial land use categories, if the type of use and level of activity is compatible with uses and activities allowed in that land use category. As an example, corporation yards and utility substations may be allowed where industrial uses are allowed.

Program 15A.1

Develop language in the Zoning Ordinance to permit public, semi-public and non-profit uses in commercial and industrial land use categories, consistent with the purposes of the land use category.

OBJECTIVE 16

Work closely with developers and the West Contra Costa Unified School District and John Swett Unified School District to mitigate potential adverse impacts of future development on school facilities.

Policy 16A

Refer applicants of new developments to the appropriate School Districts in order to pay the District's required developer impact fees prior to the building permit issuance for individual projects, as needed and justified, to maintain school performance standards.

Program 16A.1

In consultation with the School Districts, the City will seriously evaluate all available options for enhancing school financing, such as negotiating development agreements and redevelopment agreements providing for payment of additional school impact fees, participation in a Mello-Roos district by a property proposed for development and working with the School District and property owners to arrange donation or reservation of land for an elementary school site.

Program 16A.2

Work with the School Districts to negotiate an agreement whereby the School District commits to expending fees received from development within Hercules for facilities within City boundaries to the maximum extent legally feasible.

Program 16A.3

The City will not issue future legislative development approvals unless adequate school facilities are available or adverse impacts upon school facilities have been mitigated to the maximum extent legally feasible.

Program 16A.4

The School Districts will be promptly notified of all applications of specific development projects within their jurisdiction with the potential for a significant impact on schools.

Program 16A.5

Coordinate with the School Districts to develop appropriate project-specific mitigation measures. The City will give careful consideration to the School District's analysis of proposed mitigation. For specific development proposals that require legislative action (e.g., General Plan Amendment, adoption of Specific Plan, amendment to Zoning Ordinance) and that have substantial effect on school facilities through a projected increase in enrollment, the City shall enter into consultation with the School District and the project proponent(s) to determine whether there can be determined a mutually agreeable contribution to the school district by the proponent(s) (including, but not limited to cash payment, land dedication, and/or provision of school facilities) to offset the impacts of increased enrollment.

Program 16A.6

When formulating project-specific mitigations, the City will consider the effect of such mitigations on the economic viability of affordable housing projects.

Policy 16B

Future elementary school sites will be combined with a park to maximize joint use possibilities for each facility.

Program 16B.1

Coordinate with the School Districts to develop an elementary school site with an adjacent park.

Program 16B.2

Create an "Overlay District" consisting of undeveloped parcels west of San Pablo Avenue for the purpose of developing a centrally located elementary school/neighborhood park site. Parcel B, the McLeod property, is excluded from consideration because it is not centrally located.

V. LAND USE PLAN

The Land Use Diagram illustrates the location of the different land uses in Hercules. The Land Use Diagram is based upon the goals of the General Plan, the City's Economic Development Strategy, and the community's vision for a balanced community.

The Land Use Diagram identifies specific Land Use Categories. The distribution of land uses designated in the Land Use Diagram is shown in Table 2-2. The definition of these categories and the allowed intensity and/or density of such land uses must be defined. The intensity, bulk, and scale of commercial development will be measured in terms of the allowable Floor Area Ratio (FAR). FAR is the ratio of allowable building floor area to size of the lot. Specifically, the gross floor area of a building divided by the lot area produces the FAR. Thus, a FAR of 0.3 for a 100,000 square foot lot could allow a building whose total floor area is 30,000 square feet.

It is important to note that when used alone, FAR gives a developer great flexibility in deciding whether to build a low building that covers more lot area or a taller building that covers a smaller portion of the lot. FAR is used in combination with other intensity regulations, height limits, setbacks, open space, parking and building requirements, which are part of the Zoning Ordinance, and guide the final intensity of development.

Residential development is typically measured by density. The density is the number of residential units per acre. A ten acre site, which allows 8 units per acre, could result in 80 residential units (not taking into consideration other issues/constraints). The design of such development, such as whether the 80 units are clustered or spread out, is governed by height restriction, use (single family versus multi-family) and building regulations. (The updated residential land use categories assume

a population density derived by multiplying 2.89 persons per household times the units per acre). Residential development shall be consistent with gross density ranges in the Land Use Categories and Land Use Diagram; While a goal of the City is to target overall residential growth to that which would result from development of all parcels at the mid-range density, architectural density, economic variety, preserving the community's quality of life and economic viability are also equal goals of the City. The density of residential development allowed on any parcel within the City should take into consideration these City-wide goals as well as site specific considerations including but not limited to, topography, economics, neighborhood compatibility, provision of affordable housing, market conditions, and the capability of a proposed development project to further specific goals, policies or objectives of the General Plan.

The land use categories and designations are detailed below. These designations have been set forth based upon a Master Environmental Assessment, existing development within the community, and the general development constraints within Hercules. The existence of one or more site specific development constraints could limit the use of a property or limit the development to less than the intensity or density standards set forth herein. Such constraints could include, but are not limited to the following: geotechnical conditions, topography, grading impacts, environmental issues, archeological sites, faults, drainage and other factors.

Where development constraints are found to exist during the detailed site planning process or other detailed levels of the development approval process, the General Plan assumes that the density, intensity and extent of development may be reduced, based upon the goals, objectives, policies and programs of this Element. All intensity, density and population measures are calculated on gross acreage, prior to public streets, public easements, and other public dedications from the site acreage.

The following are the Land Use Categories, including the density or intensity of development, (and population generated by residential uses) for land uses shown on the Land Use Diagram.

TABLE 2.2
LAND USE DISTRIBUTION

Land Use Designation	Acres	Percent of City area
RESIDENTIAL		
Single Family - Estate	50.6	1.24%
Single Family - Low Density	957.3	23.38%
Multi-Family - Low Density	222.3	5.43%
Multi-Family - Medium Density	101.6	2.48%
Multi Family - High Density	0.0	0.00%
COMMERCIAL		
General Commercial	98.9	2.42%
Community Commercial	39.2	0.96%
Historic Town Center	13.4	0.33%
Waterfront Commercial	10.9	0.27%
Commercial/Public	7.0	0.17%
Recreation Commercial	0.0	0.00%
MIXED USE PLANNED DEVELOPMENT		
Planned Office/R&D	207.5	5.07%
Planned Commercial Residential	110.7	2.70%
Planned Commercial Industrial	62.4	1.52%
Planned Industrial Residential	1.5	0.04%
INDUSTRIAL		
Industrial	188.5	4.61%
PUBLIC/SEMI PUBLIC		
City	31.3	0.77%
School	96.9	2.37%
Park	110.5	2.70%
Open Space	<u>842.4</u>	<u>20.58%</u>
Arterial and Freeway Right-of-way	<u>307.9</u>	<u>7.52%</u>
Franklin Canyon Planning Area	633.0	15.46%
TOTAL	4093.8	<u>100.00%</u>

San Pablo Bay

San Pablo Ave.

I-80

Highway 4 Freeway

Refugio Valley Road

(Land Uses to be Determined)

- Single Family Estate
- Single Family Low Density
- Multi-Family Low Density
- Multi-Family Medium Density
- Multi-Family High Density

- Planned Commercial Residential
- Planned Office - Research&Development
- Planned Commercial Industrial
- Industrial Residential
- Industrial

- City Limit
- Sphere of Influence

- General Commercial
- Community Commercial
- Waterfront Commercial
- Historic Town Center
- Commercial-Public
- Recreation Commercial
- School Park Overlay District
- Shoreline Trail

- Public-Park
- Public-Open Space
- Public-City
- Public-School
- Franklin Canyon Area
- Special Study Area No. 1 Mixed Use Planned Development
- Special Study Area No. 2 Residential Planned Development
- Commercial Development within PCR - 12 acres

City of Hercules

General Plan Land Use Designations

September 1998

A. COMMERCIAL AND INDUSTRIAL LAND USE DESIGNATIONS

All of the Land Use Categories below use FAR (Floor Area Ratio) ranges, as well as a typical FAR.

Historic Town Center: (HTC) - The former administrative center, and some residences of the Hercules Powder Company, may be an important historical asset of Hercules. The Historic Town Center designation is to allow the reuse of existing structures, where appropriate, and the addition of new buildings, while maintaining the architectural character of the area and incorporating into the design the visual and physical access to the adjoining San Pablo Bay Shoreline. View corridors and vista points will be established to protect and promote the views to the Bay. Uses within this land use designation shall include professional, administrative, and personal service offices (e.g., real estate, travel agent, etc.), as well as retail businesses. Retail and other commercial uses shall include business support service, restaurants and coffee shops, specialty shops and other businesses that support the professional and administrative offices, as well as uses that provide goods and services to visitors of the adjoining waterfront area. The predominance of these uses shall be located in close proximity to Railroad Avenue which is intended to be the "Main Street" of this area.

Areas separated from Railroad Avenue by existing or planned buildings shall be developed with either uses described above or with multi-family dwellings. This residential development will be allowed so long as the existing or planned non-residential uses would be compatible with the residential living environment.

The design and character of uses and buildings in this land use category is critical. The Historic Clubhouse is to be retained for public use or access. Existing buildings should be retained, where feasible, and may be expanded as long as the existing character is maintained.

The FAR for the non-residential category shall range from 0.15 to 0.40, with a typical FAR of 0.20 for the land use designation area. The density for residential shall be 17 units per acre, with no more than 40 units to be developed in total (about 50 persons per acre; up to approximately 115 persons).

A planned development process will be used to refine the intensity of commercial development and density of residential development, as well as location of such development. Development guidelines will be prepared.

Waterfront Commercial: (WC) - This land use category encompasses a portion of the Hercules Point that may allow private development. Hercules Point is approximately 15 acres. State and Federal agencies will likely require much of this area to be set aside for public access or to preserve wetlands adjacent to San Pablo Bay. However, a portion of this area may be developed. The commercial uses allowed shall provide goods and services for visitors to the public access areas. Typical uses would include restaurants, bait-and-tackle shops, and other visitor-oriented uses. Other uses may include:

- Recreational boat yard, maintenance and launching facilities
- Water oriented recreational instruction facilities
- Administrative offices, and other appurtenant uses
- Food, beverage, sundries, and recreational equipment sales
- Public transportation facility (ferry and charter boat service)
- Fishing Pier

The open character and the views of the Bay are a very important asset of this portion of the community, and the design of any structures must preserve and enhance the enjoyment of the meeting of land and water. Most of this area is within the jurisdiction of the San Francisco Bay Conservation and Development Commission (BCDC) which has permit jurisdiction for development within and 100 feet inland of the San Francisco Bay as defined by the McAteer-Petris Act. (See section B.6.) The amount of development shall be limited. Substantial public access to the shoreline shall be provided. The FAR for this category shall range from 0.15 to 0.30, with a typical FAR of 0.20.

General Commercial: (GC) - This land use category is a non-specialized commercial designation that is intended to permit a wide variety of commercial uses. Businesses locating within this district will attract clientele from both Hercules and the adjacent communities, as well as those using I-80 and Highway 4. Uses allowed within this designation include retail, wholesale (open to the public), offices (business, professional and service), and other business serving the clientele described above. Uses in this designation may also include automobile service stations, restaurants, and automobile repair services, provided that the location and design of these uses effectively mitigate any potential off-site impacts.

The character of buildings within this land use category will typically be suburban in nature, one to two stories in height. More intense development may be allowed, provided that it conforms to the overall character of the development and does not adversely impact the surrounding development. The FAR for this category shall range from 0.20 to 1.00. A typical FAR for this category is 0.30.

Community Commercial: (CC) - This land use category is intended to accommodate commercial development, including retail, office, and service uses that would serve residents and employees within the City. Generally, the location of these properties and the resulting lack of direct access and visibility from regional routes effectively excludes businesses that require patronage from a regional market area. The FAR in this category shall range from 0.20 to 1.00, with a typical FAR of 0.25.

Recreational Commercial: (RC) - This land use category is intended to allow properties to be developed and used for recreational activities that are conducted as a business. Examples of such uses include a golf course, driving range, batting cages, athletic clubs and amusement centers. Development of these properties may also include sporting retail uses, such as sporting good stores, restaurants, cafes, bars, that contribute to creating a full-service commercial recreational facility. Parcel sizes shall vary from less than one acre (batting cages) to more than 100 acres (golf course). Building intensity shall also vary widely, according to the need for interior space as part of the activity. The FAR in this category shall range from 0.20 to 0.40, with a typical FAR of 0.30.

Commercial/Public: (CP) - This land use category allows transit related uses. Over time, property within this land use designation has the potential to combine transit uses with commercial development, consistent with the "General Commercial" designation, described above. The FAR for this land use category shall not exceed the FAR allowed in "General Commercial."

Planned Office/R&D: (PO/RD) - This land use category is intended to provide areas of adequate size and access to support development of a wide variety of employment-oriented business and enterprise complexes. Development of properties in these areas shall be governed by Planned Development Plans. Subdivisions or other entitlements shall not be approved unless and until a PUD Plan for the property has been approved. The Planned Development Plans shall include provisions for sewer capacity and other infrastructure, access to public streets, adequate parking, architectural guidelines or controls, and landscaping. The predominate uses in these areas shall include research and development uses, administrative offices, and manufacturing. Offices and retail service establishments serving nearby businesses and their employees shall also be allowed in this designation. Warehouse, distribution, or wholesale uses may be appropriate in these areas, if they serve or are essential to businesses in Hercules. The FAR for this category shall range from 0.25 to 1.00, with a typical FAR of 0.30.

Planned Commercial - Industrial: (PC-I) - Properties with this land use category are intended to accommodate commercial or industrial uses. They are located along I-80 and SR-4 and are visible from these routes, but have limited access. The visibility from the freeways is critical and must be preserved for these properties to be developed as commercial uses. Allowable commercial uses shall include retail, administrative office, service office, and similar uses. Allowable industrial uses shall include research and development, light manufacturing, and business industrial services. Warehouse, distribution, or wholesale uses may be allowed in this area, if they directly serve or are essential to businesses in Hercules. Development of properties with this designation shall be governed by planned development plans, and subdivisions or other entitlements shall not be approved unless and until a planned development plan for the property has been approved. The planned development plan shall include provisions for sewer capacity and other infrastructure, access to public streets, adequate parking, architectural guidelines or controls, and landscaping. The FAR for this category shall range from 0.25 to 0.50, with a typical FAR of 0.30.

Planned Commercial-Residential: (PC-R) - This land use category is designed to provide the potential to accommodate either residential or commercial or both residential and commercial uses in a well-planned, mixed-use development. Commercial structures and uses shall be developed according to a planned development plan and shall be arranged as a unified development, which may resemble a shopping center, a shopping mall, or a traditional downtown shopping street ("Main Street"). Appropriate commercial uses shall include retail businesses, professional service offices, and other customer-oriented businesses.

The residential density in this category shall not exceed 30 units per acre (approximately up to 85 persons per acre); structures within this land use designation shall have a maximum height of three stories. The FAR for non-residential use within this category shall range from 0.20 to 0.40 with a typical FAR of 0.30.

Development of these properties shall be carefully planned to insure that the benefits of mixed use development are fully realized, and the potential negative impacts of one use or another are minimized. Subdivision or partial development of any properties with this category shall not be approved until a planned development plan for full development of the property has been reviewed and approved. Planned Development plans and subdivision maps may be processed concurrently.

A 12 acre area fronting San Pablo Avenue within the Gelsar property is designated on the Land Use Diagram as "Committed to Commercial Development." This specific area shall be developed with exclusively commercial uses.

Industrial-Residential: (I-R) - This category is intended to be developed with both work-space and residential space in the same structure. The work-space will provide lower-cost, leasable space for start-up companies, craft workshops, or other businesses that require less support services or amenities than R&D or office uses. The FAR for the work-space portion of structures shall not exceed 0.50. The residential space will provide living area for persons employed in the work-space, and will generally be located above the work-space (e.g. lofts). The residential density shall not exceed 25 units/acre (approximately 75 persons per acre). Structures in these areas shall not exceed 40 feet in height. Parking requirements for proposed projects shall take into account the different peak-parking demand periods of residential and employment activity.

Industrial: (I) - This category is intended to accommodate heavy industrial uses, refineries, and storage facilities along with light manufacturing uses and other light industrial uses related to evolving technologies, research & development, communications, and information processing. The designation is to provide an opportunity for industrial uses to concentrate for the efficiency of larger industries and to allow for buffers from sensitive residential and public uses in a manner that does not expose residents to significant environmental risk. The FAR range shall be from 0.3 to 0.5, with a typical FAR of 0.40.

B. RESIDENTIAL LAND USE DESIGNATIONS:

These categories reserve property for single family (estate), single family and multi-family residential uses and structures. They may also be developed with uses and structures that support residential uses (e.g. churches, schools, day care homes and centers) and secondary units (pursuant to State law), provided that such will not cause a substantial adverse impact on nearby residences. Potential adverse impacts could include, but need not be limited to, traffic congestion, increased noise, (ambient or episodic) or expected full use of available on-street parking. Residential development on individual properties may be clustered on portions of the property so as to create a mixture of densities or housing types on the property. These "sub-area" densities may exceed the maximum density or may be less than the minimum density stated in these definitions, provided that the overall density is within the limits stated in these designations.

Single Family - Estate: (SFE) - This land use category is intended to provide sites for "estate" homes on larger lots, and shall be developed with custom-built and individually-designed homes. Secondary units, and uses that support residential uses may be allowed in this area, provided that

the adjoining neighborhood shall not be substantially impacted by traffic, noise, or other off-site effects.

- Allowable Density: 1-2 units/acre (resulting in an approximate population of 3 to 6 persons per acre)
- Maximum Building Height: 35 feet
- Minimum Parcel Size: 0.5 acre

Single Family - Low Density: (SFL) - This land use category is intended to provide areas for suburban single-family subdivisions. These lots will generally be developed as part of multi-lot "production" subdivisions, where a limited number of models (with two or three different exterior designs) are built on individual lots in a random pattern. Secondary units and uses that support residential uses may be allowed in this area, provided that the adjoining neighborhood shall not be substantially impacted by traffic, noise, or other off-site effects.

- Allowable Density: 2-7 units/acre (resulting in an approximate population of 6 to 20 persons per acre)
- Maximum Building Height: 35 feet
- Minimum Parcel Size: 6,000 sq. ft., unless a smaller lot size is allowed by an approved planned development plan.

Multi-Family - Low Density: (ML) - This land use category is mainly intended to provide sites for low-density multi-family housing. They may be developed with townhouses, condominiums or apartments. Single family homes on lots that are smaller than a "typical" suburban lot may be developed with either single family residences or duets. The size of each development shall be sufficient to allow for good design and incorporation of amenities. Uses that support residential uses may be allowed in this area, provided that the adjoining neighborhood shall not be substantially impacted by traffic, noise, or other off-site effects.

- Allowable Density: not to exceed 12 units/acre (resulting in an approximate population of up to 35 persons per acre)
- Mid-Range Density: 9 units/acre
- Maximum Building Height: 45 feet/35 feet for single family homes and duets
- Minimum Site Size: 3 acres
- Minimum Parcel Size: 3,000 sq. ft./4,000 sq. ft. for single family homes.

Multi-Family - Medium Density: (MM) - This land use category is intended to provide areas for multi-family residences (primarily condominiums, apartments, and townhouses). The size of each development shall be sufficient to allow for good design and incorporation of amenities. Uses that support residential uses may be allowed in this area, provided that the adjoining neighborhood shall not be substantially impacted by traffic, noise or other off-site effects. The higher density in these areas is expected to enable the development of additional affordable housing.

- Allowable Density: 12-30 units/acre (resulting in an approximate population of 35 to 85 persons per acre)

- Mid-Range Density: 20 units/acre
- Maximum Building Height: 60 feet
- Minimum Site Size: 5 acres

Multi-Family - High Density: (MH) - This land use category is intended to provide higher density housing, typically near public transit centers, shopping centers, or other "high activity" areas. The size of each development shall be sufficient to allow for good design and incorporation of amenities. Appropriate areas may be designated for MH use upon application where public facilities are adequate to serve the site, and the high density of use is either compatible with adjacent uses, or can be buffered from incompatible or lower density uses such that the high density will not adversely affect the adjacent use. Uses that support residential uses may be allowed in this area, provided that the adjoining neighborhood shall not be substantially impacted by traffic, noise, or other off-site effects.

- Allowable Density: 30-55 units/acre (resulting in an approximate population of 85 to 160 persons per acre)
- Maximum Building Height: 90 feet
- Minimum Site Size: 15 acres
- Mid-Range Density: 42 units/acre

C. PUBLIC/SEMI-PUBLIC LAND USE DESIGNATIONS

Designations for public and semi-public land uses are intended to allow for public and semi-public uses in the Public designations for parks, open space, city facilities, and school facilities. The land use designations are intended primarily for public uses, but private uses that are of a semi-public nature and serve the public such as utilities, private schools and transportation facilities may also be allowed.

Public/Semi-Public - City: (P/SP-C) - This land use category is intended to permit an appropriate range of local governmental and quasi public land uses and services within the City, and to reserve sites for future development and expansion of municipal facilities. City of Hercules governmental offices, public safety facilities and infrastructure/utility facilities are expected to be the main uses. Senior housing may also be allowed on an appropriate publicly owned site such as the City Hall site. New development is typically to be one to two stories in height. Building intensity may vary widely according to the nature of the public facilities. The FAR in this category shall range from 0.30 to 1.00 with a typical FAR of 0.40.

Public/Semi-Public - School: (P/SP-S) - This land use category is intended to designate and reserve sites for schools within the City. The designated school sites include existing and proposed public and private schools. School land uses include school buildings, "portables", athletic facilities and associated utilities. Other public and semi-public uses associated and compatible with school operations may be allowed by use permit. New school facility development is typically to be one to two stories in height. The FAR in this category shall range from 0.30 to 1.00 with a typical FAR of 0.40.

Public/Semi-Public - Park: (P/SP-P) - This land use category is intended to designate existing park areas, to reserve sites and expansion areas for future parks and public recreation areas designate, and to reserve appropriate park sites adjacent to school sites. The parks are improved and natural areas with full public access and facilities for active and passive recreation use. Other public and semi-public uses associated and compatible with recreational use of a park may be allowed by use permit. New park facility development is typically to be one to two stories in height. The FAR in this category shall range from 0.10 to 0.40 with a typical FAR of 0.25.

Public/Semi-Public - Open Space: (P/SP-OS) - This land use category is intended to designate and preserve public open spaces within the City; and to develop and maintain trail systems, open space, and other public amenities that benefit the quality of life in the community. Most of the larger open spaces east of Highway 80 have been dedicated to open space use as a result of past residential development. This designation is also appropriate for future open space dedications within the hills, along the San Pablo Bay, within and adjacent to sensitive habitat areas such as wetlands, and along the Refugio Creek corridor. Development would not typically be allowed within this area except for recreation facilities, caretaker housing and accessory structures directly related to the use and maintenance of an open space area. Such development shall be sited and designed to be small scale and unobtrusive.

An open space corridor along Refugio Creek within the Gelsar property is shown in the Land Use Diagram. Since the current creek location is in a meandering pattern, and may be relocated in the future, the Refugio Creek open space corridor is shown wider than existing width of the creek to acknowledge construction could not occur within 50 feet of the top of the creek's bank, except that a setback of 35 feet may be allowed on the west branch of the creek.

D. STUDY AREAS AND OVERLAYS

The Land Use Diagram designates a few study areas and overlay districts. These designations along with appropriate zoning ordinance overlay districts are intended to implement the corresponding policies of the Land Use Element.

Special Study Areas 1 & 2

The Land Use Diagram designates the Hercules Properties, Inc. parcels as a "special study area" which requires separate or combined planned development plans for each Special Study Area No. 1 and Special Study Area No. 2. These plans are intended to provide for specific, coordinated planning addressing the following characteristics:

- Historic significance and existing historic buildings.
- Opportunities for commuter rail station and transportation facilities such as other rail oriented transit, water taxi/ferry station and marina.
- Drainage, hydrology and wetland issues.
- Bay frontage location.
- Diversity of land uses.

Cooperation and joint planning by and among owners of parcels within each Special Study Area Overlay District during the land use planning and entitlement process is strongly encouraged. This effort should include such items as master hydrology and circulation plans, joint studies and cooperative infrastructure development.

School Park Overlay District

The School Park Overlay District consists of contiguous undeveloped parcels west of San Pablo Avenue which are designated for the purpose of developing a centrally located elementary school/neighborhood park site. The intent of the School-Park Overlay District is to ensure that adequate school capacity is available to serve the demand generated by new development within the overlay district. Adequate school capacity to serve a proposed project within the School Park Overlay District must either be available as certified by the school district, or improvements that provide adequate capacity as certified by the school district must be completed prior to issuance of a certificate of occupancy. If adequate school capacity is not available, the project applicant may undertake appropriate actions acceptable to the City and School District to assist in the development of adequate school capacity to serve the project:

In addition, new development within the School Park Overlay District is to fund its share of costs associated with the provision of park facilities to serve the development.

Franklin Canyon Golf Course Area

The Franklin Canyon Golf Course area is located in the City of Hercules, consists of 633 acres with a public golf course, parking and clubhouse facilities. The Franklin Canyon Golf Course was not included in the General Plan revision process. The golf course property has a settlement agreement approved by the Contra Costa County Board of Supervisors, City of Hercules and the property owner. The settlement agreement conditions the golf course property to postpone residential development until Highway 4 is improved

The development applications and process for the Franklin Canyon Golf Course property will require:

- a. A specific plan with design guidelines.
- b. A Planned Development Plan.
- c. A design review permit.
- d. An EIR analyzing the impacts of the proposed development.
- e. A subdivision tract map.

Sphere of Influence Area

The Hercules Sphere of Influence area consists of 13 separate parcels which total approximately 850 acres. Neighboring jurisdictions adjacent to the Sphere include:

- a. The unincorporated town of Rodeo west of Sphere.
- b. Contra Costa County to the north and east of the Sphere.

c. City of Hercules south of the Sphere.

Existing land uses and structures range from ranch house complex, agricultural, animal grazing, single family residential, to heavy industrial businesses including manufacturing, truck freight operations, machine shop, and a coke refinery plant. There are also electrical transmission lines and oil and gas pipeline easements throughout the Sphere area.

The Sphere of Influence is a valley containing rolling, moderate and steep hillsides (20-60%), alluvial plains, hilltops and ridgelines, elevations ranging from 60 to 580 feet above sea level, and a flowing creek with tributaries, the Rodeo Creek. Significant vegetation includes clusters of oak trees on hillsides, creek associated vegetation and wetlands, and an endangered fauna, the Contra Costa Gold Field.

The Sphere of Influence area's northern limits are defined by the Burlington Northern and Santa Fe railroad tracks and right-of-way. Approximately 20-25 trains per day pass along the railroad, creating noise and safety considerations.

Local circulation consists of Sycamore Road, Violet Road, Willow Avenue, Bayberry and Palm Avenue, and Highway 4. Regional circulation consists of the Highway 4 freeway improvement project.

The Sphere has desirable views of San Pablo Bay and is within the Highway 4 freeway scenic corridor. Future development within the Sphere of Influence area include opportunities for a diverse mix of housing, good visibility and marketing windows from Highway 4 for regional serving retail and commercial uses, integration of City's Highway 4 Scenic Highway program to create entry gateways to the City, preservation of scenic amenities and visual enhancement of the City's image.

Several of the property owners within the Sphere of Influence area, have expressed a desire to be incorporated into the City of Hercules. This will require annexation approvals from the Local Agency Formation Commission, pre-zoning approvals, and an EIR analyzing the impacts of the proposed land uses.

CIRCULATION ELEMENT

**APPROVED BY THE CITY COUNCIL
SEPTEMBER 22, 1998**

III. THE CIRCULATION ELEMENT

A. AUTHORITY

1. Circulation

Government Code Section 65302 (b) requires a Circulation Element in all City and County General Plans, as follows:

"A circulation element consisting of the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other local public utilities and facilities, all correlated with the Land Use Element of the Plan."

B. RESEARCH AND ANALYSIS

1. Introduction

The Circulation Element is concerned with: 1) the movement of people and commodities (including energy) through the City; and, 2) local planning for scenic highways in the City.

The Land Use Element and the Circulation Element of the General Plan must work together so that the land use impacts and needs and the circulation/transportation system capability are coordinated. Projections of the traffic which will be generated by future development are the basis for the planned circulation system improvements in the Circulation Element.

This section will summarize and analyze background data relating to:

- a. Traffic circulation
- b. Scenic routes
- c. Public transit
- d. Other transportation facilities
- e. Traffic study areas
- f. Traffic mitigation project

Transportation issues, information, policies and programs related to air quality and transportation of hazardous wastes are addressed in other elements of the General Plan. Air quality is addressed in the Open Space and Conservation Element. Additional air quality data, impact and mitigation analysis is contained within the City of Hercules General Plan Land Use and Circulation Elements Update and Redevelopment Plan Amendments Final Environmental Impact Report. Transportation of Hazardous Wastes is addressed by the Hazardous Waste Management Plan Element.

2. Traffic Circulation

a. Area-wide Circulation

The City is served by two major freeways, Interstate Route 80 and Highway 4 freeway. I-80 provides access to the San Francisco Bay Area, Sacramento and to the western states. Highway 4 freeway connects I-80 with the Sacramento delta and central Contra Costa County. See Figure III.1.

I-80 is presently six lanes and the Department of Transportation is considering an expansion to an eight-lane facility with possibly a future expansion of Bay Area Rapid Transit (BART) system paralleling I-80 in the Hercules area. Highway 4 is partly a freeway and partly a two-lane highway between I-80 and Martinez, and is planned for expansion to a six-lane freeway. Several existing ramp connections to these two freeways serve the City via Willow Avenue, San Pablo Avenue, and Bayberry. San Pablo Avenue provides a connection to communities north and south of Hercules and serves as a by-pass for I-80 when freeway traffic is congested.

b. Local Circulation

In September, 1994, the General Plan Circulation Element - Transportation Technical Report was prepared by DKS Associates. This study measured the existing traffic conditions throughout the City and projected traffic conditions which can be expected by the year 2010. A detailed analysis of projected traffic conditions identifying impacts and mitigation measures for buildout of the General Plan is also presented in the City of Hercules General Plan Land Use and Circulation Elements Update and Redevelopment Plan Amendments Final Environmental Impact Report.

Land Use Assumptions

The focus of the study is the peak hour condition at full "Build-out" (i.e. development) of land both within the City and its sphere of influence to the east along Highway 4. Travel demand on the transportation network was estimated using the West County Travel Demand Model. For this study, the year 2010 land use database was refined to reflect changes in plans since 1990 (see Table III.1 and Figure III.2). Details of the revised household and employment projections used in the land use file are provided in Table A-2 of the separately bound Transportation Technical Report Appendices document.

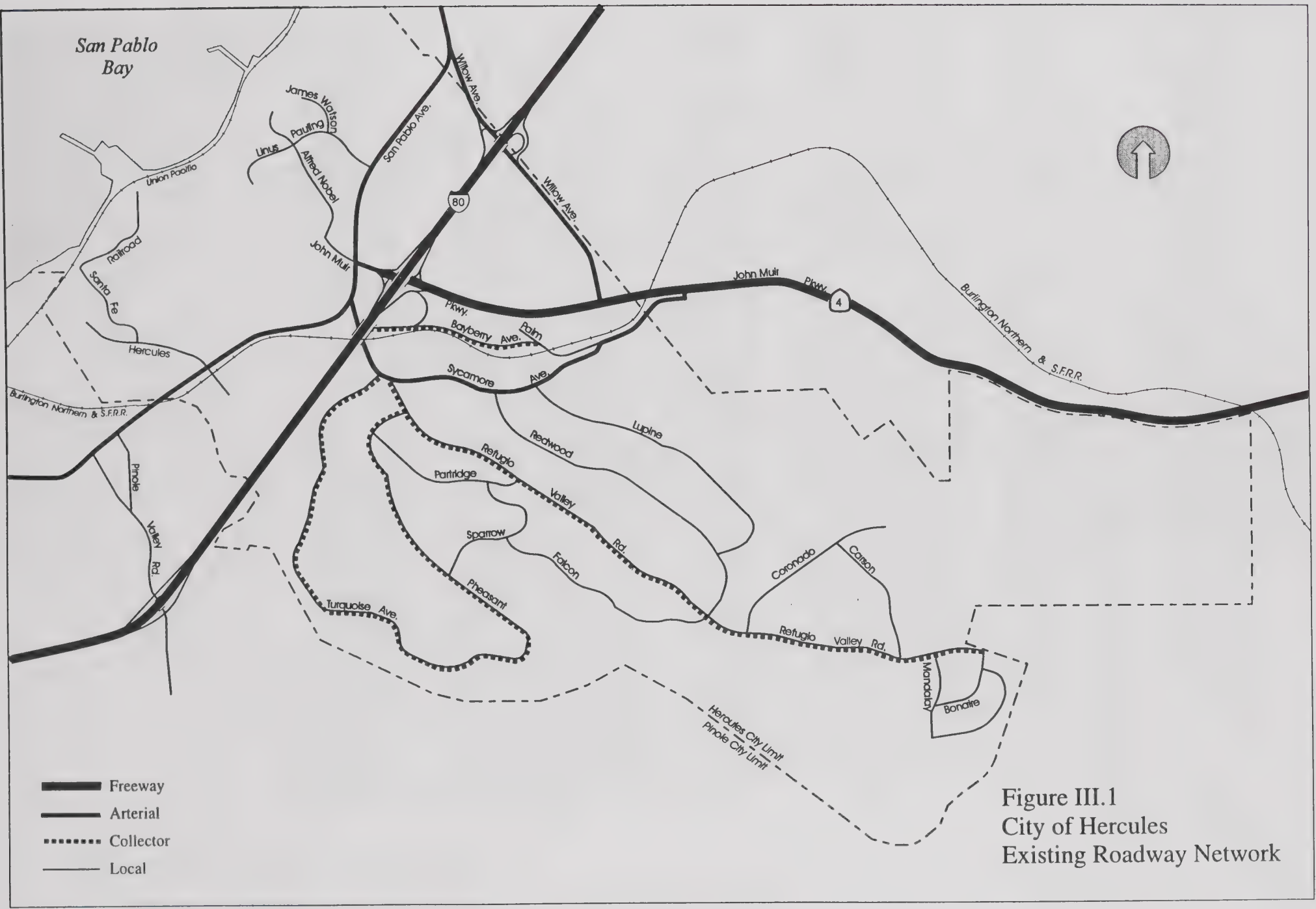


Figure III.1
City of Hercules
Existing Roadway Network

Network changes anticipated to occur by buildout were also incorporated into the model (see Table III.2 and Figure III.3). Local connections to projects were also incorporated into the model, based on assumptions developed in conjunction with City staff and information contained in adopted planning documents.

3. Transportation Improvements

Identifying the transportation improvements which must be constructed in order to achieve the City's General Plan Policy of maintaining a Level of Service D or better for peak hour traffic operating conditions is a three-step process.

First, the quantified land uses are combined with the appropriate trip generation rates in the traffic model to determine the number of peak hour trips which would be generated on roadways and at specific intersections. Secondly, the traffic model is then used to determine the Level of Service of traffic operation at intersections in the City were developed to full "Build-out" without any improvements to the circulation/transportation system. Third, the model is used to identify which specific transportation improvements need to be constructed in order to achieve a Level of Service D or better in the City.

There are several transportation improvements included in the City's Capital Improvement Program (CIP) and the Highway 4 West and San Pablo Avenue Circulation Improvement Plan. Table III.3 lists each project that has committed funding or is reasonably assured of being completed. The location of these projects is shown on Figure III.4.

Projected levels of service for major intersections in 2010 are shown in Table III.4. Two intersections would operate below an acceptable level during both the weekday A.M. and P.M. peak hours: San Pablo Avenue/Sycamore Avenue and San Pablo Avenue/John Muir Parkway. Both of these intersections are projected to operate at LOS F in the future. Because these two intersections are adjacent to each other, they share a common congested segment of San Pablo Avenue. This segment of San Pablo Avenue, between Highway 4 and Sycamore Avenue and further south to the city limit is the only deficiency identified for Year 2010 conditions.

The recommended circulation plan should include all of the committed improvements discussed in Section 3, plus measures to alleviate remaining deficient conditions anticipated at buildout of the City of Hercules. As noted in Section 3, the main deficiency identified in Hercules is the section of San Pablo Avenue between Sycamore Avenue and the south City limit.

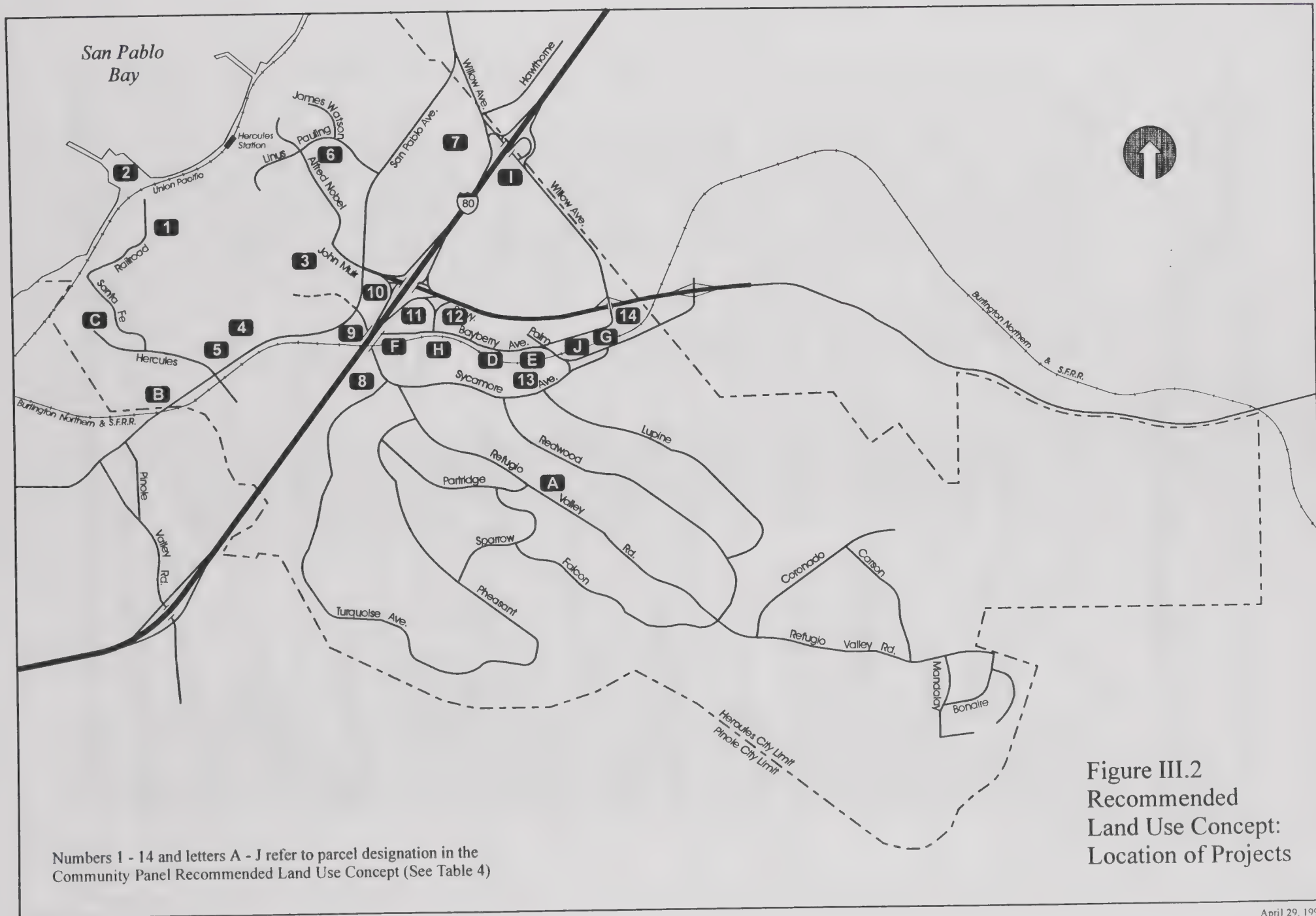


Table III.1
Estimated Trip Generation
Community Panel Recommended Land Use Concept

Parcel	Land Use	Size	Units	ADT	AM Peak Hour Total	PM Peak Hour Total
1	<u>HPI Site</u>					
	Historic Town Center	85.000	ksf	518	47	60
	Historic Town Center - Res.	25	mfd	149	16	17
	Planned Office/R&D	459.558	ksf	3737	509	469
	Commercial	82.764	ksf	6279	145	582
	Planned Office/R&D	199.940	ksf	1922	248	237
	Planned Office /R&D	39.204	ksf	523	60	62
	Residential	108	mfd	668	62	72
	Multi-Family, Med. Density	669	mfd	4324	374	433
2	<u>Hercules Point</u>					
	Waterfront Commercial	52.272	ksf	4712	111	434
3	<u>Gelsar Site</u>					
	General Commercial	153.549	ksf	9240	209	862
	Residential	1350	mfd	8874	754	865
4	<u>Hercules Inc. Site</u>					
	Multi-Family, Med. Density	735	mfd	4761	411	475
	Planned Commercial	42.471	ksf	4138	98	380
	Residential	98	mfd	605	56	65
	General Commercial	137.214	ksf	8612	196	803
5	<u>MRB Site</u>					
	Multi-Family, Med. Density	138	mfd	859	78	91
	Planned Commercial	13.068	ksf	1981	49	180
6	<u>North Shore Business Park</u>					
	Planned Office/R&D	795.841	ksf	5796	819	736
	General Commercial	202.554	ksf	10986	246	1029
	Planned Office/R&D	900.000	ksf	6394	911	815
7	<u>ANR Site</u>					
	Planned Commercial/Indust.	724.838	ksf	24373	522	2318
	Industrial	362.420	ksf	2559	315	60
8	<u>Hercules Square</u>					
	Community Commercial	31.581	ksf	3439	82	315
9	<u>ORB Site</u>					
	General Commercial	20.000	ksf	2585	63	235
10	<u>BART Site</u>					
	Public/Semi Private			Park-and-Ride Lot		

Table III.1 (Continued)
Estimated Trip Generation
Community Panel Recommended Land Use Concept

Parcel	Land Use	Size	Units	ADT	AM Peak Hour Total	PM Peak Hour Total
11	<u>I-80 Loop Site</u> General Commercial	82.328	ksf	6258	145	580
12	<u>Williamson Site</u> General Commercial	116.305	ksf	7767	178	722
13	<u>Sycamore Site</u> Planned Commercial Residential	54.88 502	ksf mfdu	4857 3222	114 281	448 326
14	<u>Five Giants</u> General Commercial	91.476	ksf	6685	154	620
A	<u>Church of Nazarene</u> Multi-Family, Low Density	50	mfdu	304	29	34
B	<u>McLeod</u> Multi-Family, Low Density	74	mfdu	454	43	49
C	<u>Citation</u> Multi-Family, Low Density	67	mfdu	410	39	45
D	<u>Carone - 1</u> General Commercial	26.136	ksf	3055	74	279
E	<u>Carone - 2</u> General Commercial	23.522	ksf	2860	69	261
F	<u>Carone-Sycamore</u> Community Commercial	33.977	ksf	3600	86	330
G	<u>Old ATSF</u> Community General	22.216	ksf	2860	69	261
H	<u>Creekside</u> Community General	160.455	ksf	9497	215	887
I	<u>Willow Center</u> General Commercial	31.000	ksf	3399	82	311
J	Church of Christ	20.000	ksf (est.)	186	15	14
Total				173,347	7,972	16,753

Notes: ksf = thousand square feet; du = dwelling unit (mf = multi-family; sf = single family);

ADT= Average Daily Traffic

Sources: Institute of Transportation Engineers, Trip Generation, 5th Edition, 1991; City of Hercules; DKS Associates

San Pablo Avenue is designated as a regional route in the West Contra County Action Plan for Routes Of Regional Significance. As such, it is not subject to the same level of service standards as other "basic routes." Rather, it is subject to a traffic service objective, which is level of service E. The congestion on this section of San Pablo Avenue is due, in large measure, to diversion of traffic from I-80. Analysis of the travel demand modeling indicates that about one-third of the morning peak hour traffic on this section of San Pablo Avenue would use I-80 instead if there was adequate capacity.

The West County Action Plan cites several potential measures for improving congestion on San Pablo Avenue. While these projects are important with respect to improving traffic flow in Hercules, they would not have a large impact on San Pablo Avenue traffic operations between Sycamore Avenue and Highway 4/John Muir Parkway. The Action Plan cites the following additional measures:

a. Responsibility Of WCCTAC Jurisdictions

With an objective to maintain LOS E or better, these measures should be implemented:

- monitor level of service on San Pablo Avenue
- discourage through traffic on I-80 from diverting onto to local streets (through improvements to I-80 such as the HOV lane construction by Caltrans scheduled to begin in 1995, and by requesting CCTA to develop, in conjunction with Caltrans and Solano County, a Traffic Operation System Management plan For I-80 that will regulate the flow of traffic on I-80 to respect the freeway's system's constraints and bottlenecks.)
- encourage I-80 traffic to stay on freeway and minimize early exits
- adopt design standards for new development to minimize turning movements on and off of San Pablo Avenue (try to minimize the number of access points on and off of San Pablo Avenue)
- synchronize signal timing throughout the San Pablo Avenue corridor
- emphasize HOV use of I-80 and encourage transit use in the corridor
- encourage diverted traffic to return to I-80 on the next downstream feeder road through improved signage
- clearly identify feeder roads for diverted motorists to return to I-80
- support WestCAT's efforts to assess need for improved transit service along San Pablo
- support extension of bicycle lanes to encourage more usage

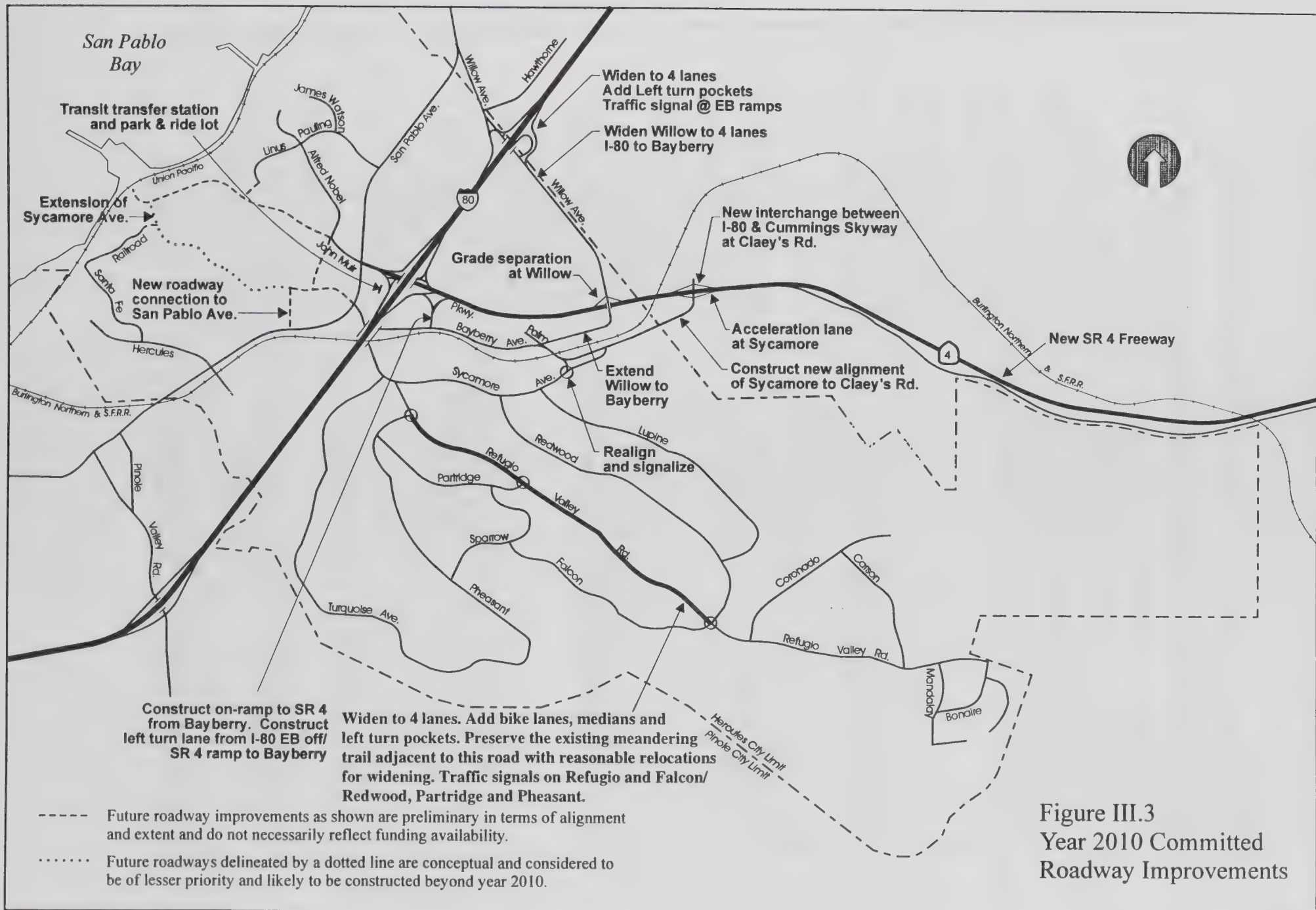


Figure III.3
Year 2010 Committed
Roadway Improvements

Table III.2
Committed Roadway Network
Year 2010

Project	Limits	Description
Willow Avenue Improvements Phase II	Under I-80 Overpass	Widen to 4 lanes; Add Left turn pockets; Traffic signal @ EB ramps
Route 4 Improvements Willow/Sycamore	I-80 EB to Cummings Skyway	Widen to 4 lanes; Grade separation at Willow; Extend Willow to Bayberry; Acceleration lane at Sycamore; New interchange between I-80 & Cummings Skyway at Claeys Rd.
San Pablo Avenue Improvements	Westside-Linus Pauling to northern city limit	Rehabilitation and add bicycle lanes
Refugio Valley Road Reconstruction	Pheasant to Redwood	Widen to 4 lanes Add bike lanes, medians & left turn pockets Traffic signals on Refugio at Falcon/Redwood, Partridge and Pheasant
Transit Improvement Program	Sycamore/San Pablo	Transit transfer station & park & ride lot 1/2 of parcel 10 site with access off of Sycamore and San Pablo
Bayberry/Route 4 ramp improvements	At Bayberry/SR 4/I-80	Construct on-ramp to SR 4 from Bayberry Construct left turn lane from I-80EB off/SR 4 ramp to Bayberry
Sycamore Ave extension	to Claeys Rd	Construct new alignment of Sycamore to Claeys Rd
Local Access Road	South of Claeys Rd interchange	Construct local access roads (Claeys Rd) to Route 4 interchange
Palm/Sycamore intersection	Palm/Sycamore	Realign and signalize

b. Responsibility Of City Of Hercules

With an objective to maintain LOS E or better, these measure should be implemented:

- explore feasibility of construction of a second northbound right turn lane between Sycamore Avenue and Highway 4 to allow right turns from westbound Sycamore Avenue while preserving the public investment in the City of Hercules transit transfer station (the new park and ride lot at parcel 10)
- promoting commuter rail and a train station in the city to intercept through travelers on I-80.

Of the measures listed above, only the first measure cited particularly for the City of Hercules would cause measurable changes in service levels at the San Pablo Avenue/Sycamore Avenue and San Pablo Avenue/John Muir Parkway intersections. The additional northbound right turn lane would not improve the service levels at these intersections to LOS E, however. Even with major geometric changes at these two intersections, the service levels would still be projected to operate at LOS F, with a volume-to-capacity (V/C) ratio of just over 1.00. The geometric improvements would involve making San Pablo Avenue a six lane arterial between Sycamore Avenue and Highway 4/John Muir Parkway and adding several turn lanes to accommodate major turn movements. The turn lane additions that would have to be considered, in addition to widening San Pablo Avenue, would create three westbound to southbound left turn lanes and a second southbound to eastbound left turn lane at John Muir Parkway. At Sycamore Avenue, a third southbound to eastbound left turn lane and a third westbound to northbound right turn lane would be needed to get the service level close to LOS E.

The City would need to consider not only the construction cost of these improvement but also the right-of-way costs and visual impacts. There is currently a median of varying width in the middle of San Pablo Avenue between Sycamore Avenue and John Muir Parkway. The median width varies due to the left turn pockets at the intersections. A striped bike lane and landscaping abut San Pablo Avenue along its western frontage (adjacent to the southbound lanes). Along the eastern side of San Pablo Avenue between Sycamore Avenue and John Muir Parkway, there is a striped bike lane and a sidewalk adjacent to the park and ride lot.

Intersections with triple left turn lanes are very unusual and generally indicate the need for an alternative approach to improvements. Approaches to significant over-capacity conditions that are typically used include construction of new parallel facilities or the use of grade separations to eliminate conflicting turning movements. It is also common to look for alternative transportation modes to take up the excess demand.

Table III.3
Year 2010
Intersection Level of Service Summary

Signalized Locations	AM Peak Hour		PM Peak Hour	
	V/C Ratio ¹	LOS ²	V/C Ratio	LOS
Bayberry/Sycamore	0.82	D	0.70	B
San Pablo/Sycamore	1.35	F	1.37	F
San Pablo/John Muir Parkway	1.82	F	2.49	F
Turquoise/Sycamore	0.58	A	0.50	A
Refugio Valley/Sycamore	0.57	A	0.50	A
Willow/I-80 Westbound Ramp	0.76	C	0.40	A
Willow/SR 4 Westbound Ramp	0.26	A	0.30	A
Claeys/SR 4 Eastbound Ramp	0.19	A	0.33	A
Palm/Sycamore	0.15	A	0.16	A

Unsignalized Locations One- and Two-Way Stop	Minor St. ³		Major St.	
	LOS	LOS	LOS	LOS
Claeys/Sycamore		D	A	FA
I-80/SR 4 Ramp/Bayberry	B	A	C	A
Claeys/SR 4 Westbound Ramp	A	A	A	A

¹ Volume-to-Capacity Ratio.

² Level of Service.

³ Worst movement is presented for both the minor and major street approaches.

Source: DKS Associates.

Table III.3
Year 2010
Intersection Level of Service Summary

Signalized Locations	AM Peak Hour		PM Peak Hour	
	V/C Ratio ¹	LOS ²	V/C Ratio	LOS
Bayberry/Sycamore	0.82	D	0.70	B
San Pablo/Sycamore	1.35	F	1.37	F
San Pablo/John Muir Parkway	1.82	F	2.49	F
Turquoise/Sycamore	0.58	A	0.50	A
Refugio Valley/Sycamore	0.57	A	0.50	A
Willow/I-80 Westbound Ramp	0.76	C	0.40	A
Willow/SR 4 Westbound Ramp	0.26	A	0.30	A
Claeys/SR 4 Eastbound Ramp	0.19	A	0.33	A
Palm/Sycamore	0.15	A	0.16	A

Unsignalized Locations One- and Two-Way Stop	Minor St. ³		Major St.	
	LOS	LOS	LOS	LOS
Claeys/Sycamore		D	A	FA
I-80/SR 4 Ramp/Bayberry	B	A	C	A
Claeys/SR 4 Westbound Ramp	A	A	A	A

¹ Volume-to-Capacity Ratio.

² Level of Service.

³ Worst movement is presented for both the minor and major street approaches.

Source: DKS Associates.

c. Potential Circulation Improvements

Hercules has several options relating to how to address the future deficiency on San Pablo Avenue: The first would be to accommodate the heavy travel "desire line" in the I-80 corridor through additional access and capacity enhancements on San Pablo Avenue. Some or all of the following circulation improvements could help alleviate some of the future congestion identified for San Pablo Avenue:

- 1) **I-80/Highway 4 Freeway Interchange Improvements.** Due to the existing ramp configurations, San Pablo Avenue between John Muir Parkway and Sycamore Avenue acts as part of the I-80/Highway 4 freeway interchange. Providing direct connections from the freeways to San Pablo Avenue with potential flyovers of the critical intersections would take some of these movements out of critical intersections.
- 2) **Increase Capacity on San Pablo Avenue.** Widen San Pablo Avenue from four lanes to six lanes between John Muir Parkway and the southern Hercules City limit.
- 3) **Grade Separations.** Grade separate the intersections of San Pablo Avenue and John Muir Parkway and San Pablo Avenue and Sycamore Avenue. The grade separations would allow through traffic on San Pablo Avenue to not interfere with turning movements at these intersections. Much of the through traffic on San Pablo Avenue is traveling through the City to and from points outside of Hercules. The turning movements at these intersections involves motorists traveling to and from points within Hercules.

These actions would provide additional capacity, and would encourage use of San Pablo Avenue as a bypass route to the freeway. Although widening of San Pablo Avenue may be possible in Hercules, it would be more troublesome in Pinole. The regional consensus on I-80 corridor capacity issues that developed from the *West County Action Plan* is that diversion of traffic away from I-80 onto San Pablo Avenue should be discouraged, rather than encouraged. The capacity enhancements discussed above would be counterproductive to this regional consensus.

The second option is to continue to work with other West County jurisdictions and regional transit agencies to develop alternatives to single-occupant automobile use in the I-80 corridor. This would include pursuing BART extensions in West County, commuter rail service to Solano County, and improved bus connections. The blueprint for this approach is provided in the West County Action Plan. It should be recognized that this approach is not likely to result in meeting the traffic service objective on San Pablo Avenue (level-of-service E) if the land development in western Contra Costa County, Solano County and the remainder of the Bay Area occurs generally as anticipated in the West County Travel Demand Model.

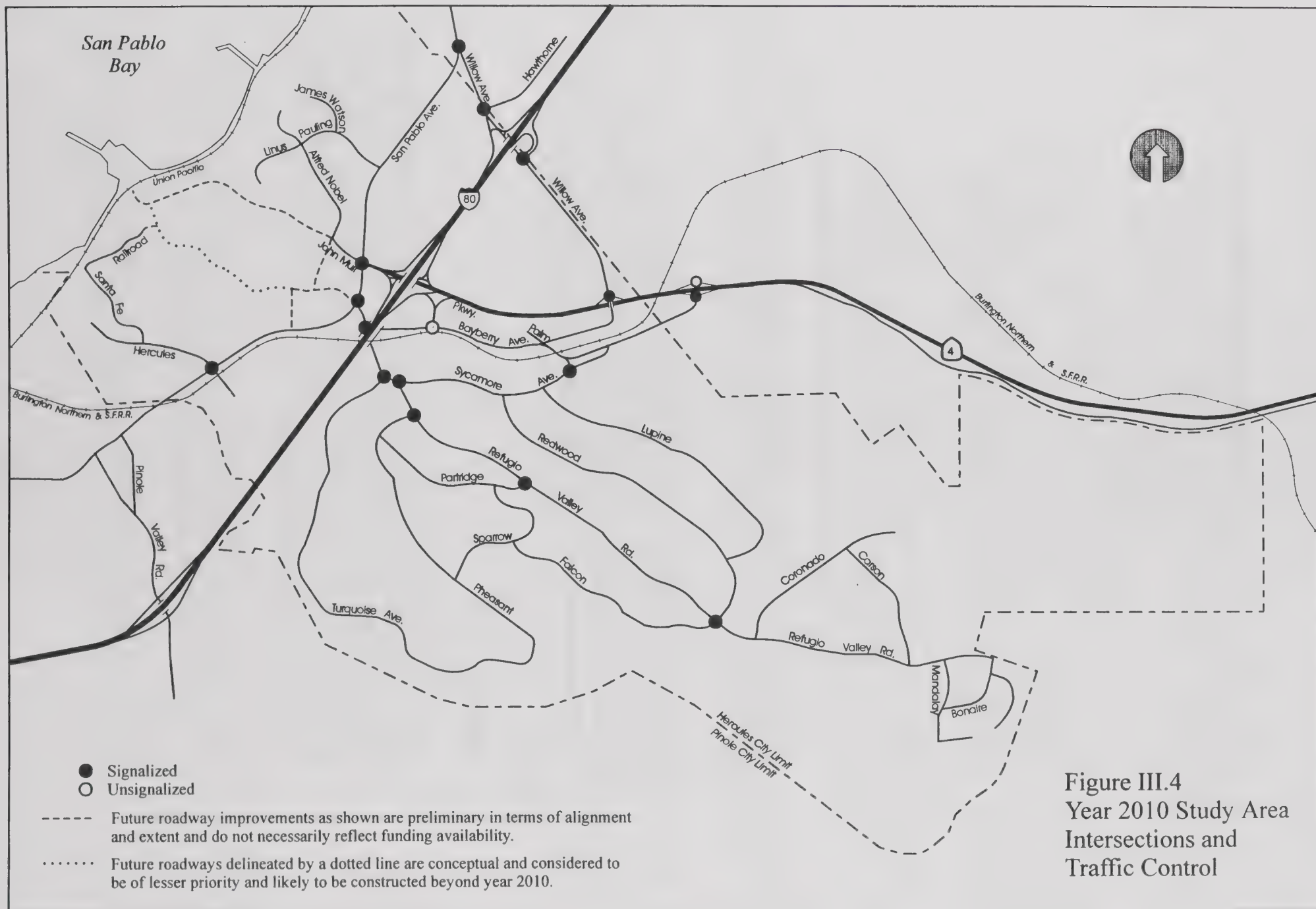


Figure III.4
Year 2010 Study Area
Intersections and
Traffic Control

Considering the options, we suggest the "transportation alternatives" approach as most appropriate for Hercules.

4. Scenic Routes

The two scenic routes within the City of Hercules are:

<u>Road Name and Category</u>	<u>Termini</u>	<u>Length</u>
Highway 4 Scenic Freeway	Interstate 80 to State Route 84	33.4 miles
San Pablo Avenue Scenic Thoroughfare	Pinole Valley Road to Interstate 80 at Crockett	6.6 miles

Both of these segments have been designated as City Scenic Routes (see Figure III.1).

San Pablo Avenue through the City of Hercules is presently a scenic corridor of relatively high environmental value and should be preserved and enhanced as the City grows and develops.

The Highway 4 freeway presents outstanding scenic qualities along its corridor, i.e. the Franklin Canyon Golf Course. Since Highway 4 is an important window to the City, the general movement of the view from this facility is a desirable environmental goal. The City should be particularly interested in the design configuration and quality of landscaping in connection with future construction to freeway standards by the State.

5. Transit

a. **Existing Service**

The BART system connects the City of Richmond with Fremont to the south, Concord to the east and San Francisco and Daly City across the Bay and to the south. This system is primarily a fixed rail commuter service from outlying communities to major employment centers in the Bay Region. The most accessible BART station for Hercules is the El Cerrito Del Norte station, at Cutting Boulevard and I-80 in Richmond, nine miles south of Hercules.

Public Transportation within Hercules is provided by two agencies: Western Contra Costa County Transit Authority (WestCAT) provides the local service while the Bay Area Rapid Transit (BART) is the regional carrier. Their services are as follows:

Bus service in Hercules is currently served by AC Transit and WestCAT (see Figure III.5). AC Transit Route 74 runs along San Pablo Avenue between Crockett and the

Richmond BART station. It operates weekdays on one-hour headways, with a stop located at the WestCAT Transit Transfer Station on John Muir Parkway just west of San Pablo Avenue. WestCAT Transit Line 30Z travels along Highway 4 from Martinez to Hercules, stopping at the WestCAT Transfer Terminal, and continuing on to the El Cerrito Del Norte BART stations.

WestCAT bus service is available throughout Hercules. Four lines operate on weekdays, and each line travels between the WestCAT Transfer Terminal and Sycamore Avenue. Line 10 runs along Turquoise Avenue, Pheasant and Sparrow. Line 12 travels along Sycamore Avenue, Redwood, Violet and Lupine. Line 13 covers Refugio Valley Road as well as Carson, Grissom and Coronado. Line 14 runs along Pheasant, Sparrow, Falcon and Refugio Valley Road west of Redwood.

WestCAT also provides door to door Dial-A-Ride service for senior and disabled passengers in portions Hercules and Rodeo not otherwise served by WestCAT. In Hercules, the Dial-A-Ride service area extends east of San Pablo Avenue and north of Highway 4 freeway.

WestCAT connects several points in northern and western Hercules with the El Cerrito Del Norte BART station. In Hercules, passengers can access the bus at the North Shore Business Park and the Willow Avenue/I-80 Park & Ride lots.

Park & Ride lots currently exist at the I-80/Willow Ave ramps intersections. Approximately 99 spaces are available for commuters in these lots. Connecting service to WestCAT is available at these lots. The San Pablo Avenue Park & Ride lot located on the east side of San Pablo Avenue between Sycamore Avenue and Highway 4 freeway contains about 200 spaces and provides parking for commuters using AC Transit, WestCAT, Vallejo Transit.

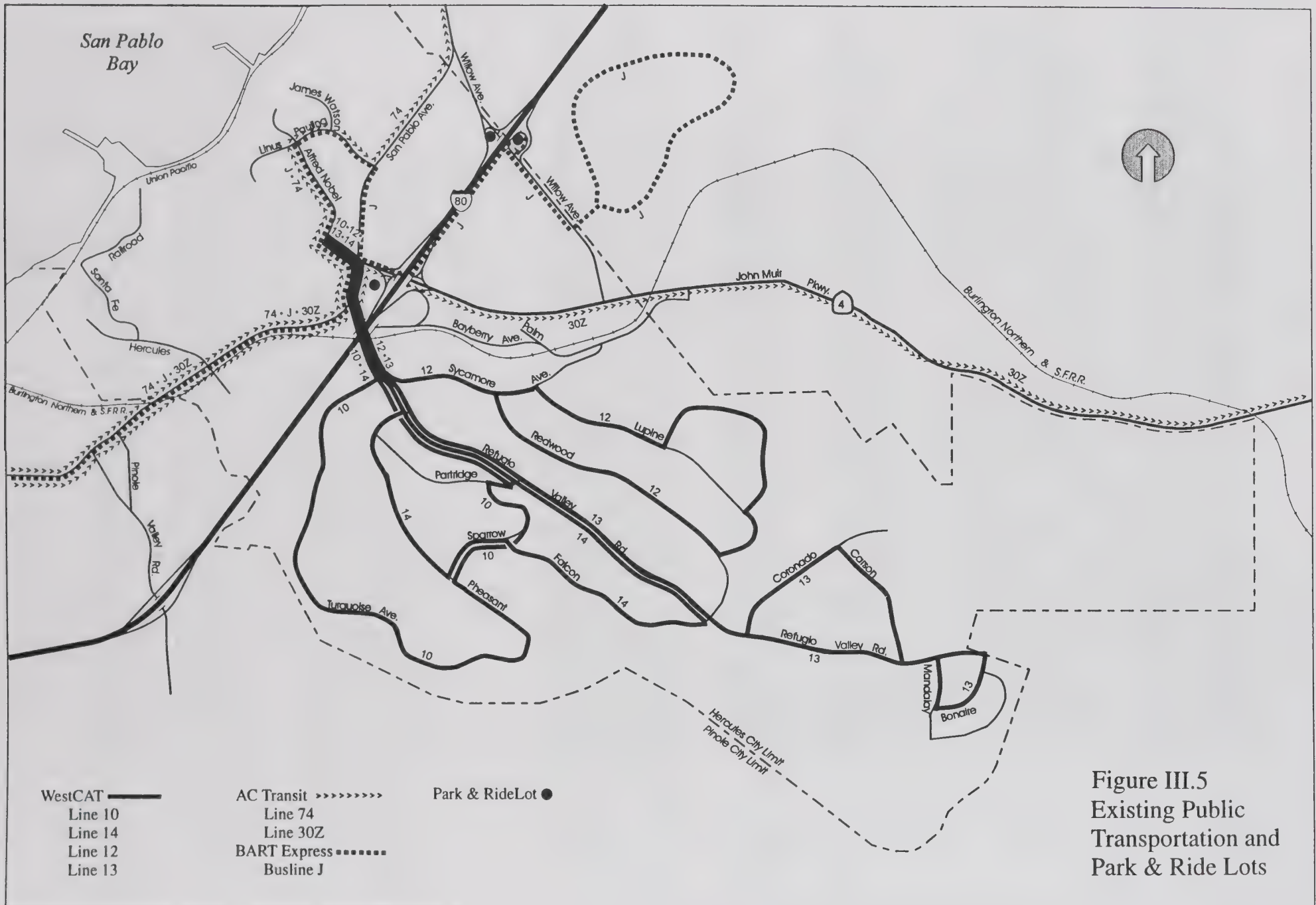


Figure III.5
Existing Public
Transportation and
Park & Ride Lots

6. Other Transportation Facilities

The City is traversed by two railroad lines; the Union Pacific and the Burlington Northern and Santa Fe Railway, which is a main line. At present there is no direct water or air service to the City. The deep water channel is several miles from the shoreline at Hercules. The City is conveniently located to two international airports - Oakland and San Francisco.

The Union Pacific rail line along the shoreline provides rail transit along the Joint Powers Board (JPD) "Capitol Corridor." This provides an opportunity to locate a rail station within Hercules in the lower Refugio Valley which could be developed in conjunction with projects proposed in the area. A rail station would provide expanded transit opportunities for the community and a possible location for a multi-modal transit center along San Pablo Bay. An extension of John Muir Parkway connecting to I-80 and the Highway 4 freeway would serve the site.

7. Riding and Hiking Trails

A connecting system of bicycle and hiking trails are shown on the Open Space and Conservation Plan. The trail system will be separated from streets and highways, where practical, connecting open spaces and activity areas in the community and linking with regional trails.

8. Transmission Lines and Pipelines

There are a number of existing and proposed overhead and underground facilities in the City. Sewer, water and stormwater facilities are addressed by the Growth Management Element. Maps of the facilities are on file at City Hall. The facilities include:

- a. Overhead power transmission lines (60 KV and 115 KV)
- b. Water mains and reservoirs
- c. Sewer trunk and treatment plant
- d. Fuel lines
- e. Gas lines

C. POLICIES AND PROPOSALS

1. Objectives

The basic objectives of the Circulation Element are to:

- 1) Provide for the movement of people and commodities in the City,
- 2) Plan for the preservation and enhancement of visual qualities as viewed from designated scenic routes.

Subgoals of these basic objectives are to:

- a. Established a long-term program for the construction of streets and preservation of future rights-of-way based on traffic projections.
- b. Coordinate the street system with land use and other elements of the General Plan.
- c. Unify the City with a functional internal street system of arterials, collectors, and local streets.
- d. Provide adequate access from the freeways to the surface street system.
- e. Coordinate the City's street system with adjoining city, county and state facilities.
- f. Maintain acceptable local circulation operating conditions on arterial streets/intersections and on local collector streets.
- g. Minimize through traffic in residential neighborhoods.
- h. Promote public transit service within the City and area.
- i. Provide a comprehensive system of riding and hiking trails.
- j. Provide for needed transmission facilities in a manner compatible with other elements of the General Plan.

2. Policies

- a. The policy on traffic level of service reflects the "traffic service objectives" set out in the West County Action Plan. The City has adopted a Growth Management Element to comply with Contra Costa County Measure C (1988). This included adoption of level of service standards on "basic routes" depending on the location of the route: CBD (central business district), urban, suburban, semi-rural and rural.

As also noted in the Growth Management Element of the General Plan, the following are the traffic service standards for Basic Routes (Local Streets) in Hercules:

LOS "High" D to "Low" E (maximum v/c ratio is 0.94)

- Sycamore Avenue (from Bayberry to San Pablo Avenue)
- Bayberry (from I-80 ramps to Sycamore)

LOS "High" D - (maximum v/c ratio is 0.89)

- Sycamore Avenue (Highway 4 Freeway- Bayberry)
- Refugio Valley Road (Sycamore - Redwood/Falcon)
- Alfred Nobel Drive
- Linus Pauling Drive
- James Watson Drive
- John Muir Parkway

LOS "Low" D - (maximum v/c ratio is 0.84)

- All other Basic Routes (that is, except Routes of Regional Significance).

Measure C calls for "routes of regional significance" to have a separate "traffic service objective" set cooperatively by all the jurisdictions of western Contra Costa County. Routes of regional significance in Hercules are: I-80, Highway 4 Freeway and San Pablo Avenue. The Circulation Draft of the West County was published on July 29, 1994, and recommends a traffic service objective of LOS E at signalized intersections on San Pablo Avenue.

For health, safety and general welfare, it is the City's policy to provide adequate levels of traffic service throughout the City. Level of Service D or better is the city wide standard for traffic operating conditions during peak hours on residential streets and intersections. Level of Service D for the commercial/industrial development is acceptable under the following conditions:

- 1) striving for off-peak uses
- 2) producing Living Wage jobs
- 3) generating City Revenue and/or
- 4) proposing development that is otherwise highly desirable community-wide.

New development shall be required to pay its fair share of the cost of improving regional routes so that compliance with the service standard specified in the Action Plan is maintained.

- b. Neighborhood design should discourage through traffic on local streets.
- c. Residential streets will be designed in relation to the needed capacity and the adjoining housing patterns.
- d. Proposed elements within view of designated scenic routes in the City should be reviewed in terms of their visual impact.
- e. The City shall actively participate in cooperative efforts to provide effective public transit to the City and adjacent communities, including promoting a commuter rail extension of BART in the City and a train station along San

Pablo Bay within the Lower Refugio Valley serving the Capitol Corridor to intercept through travelers on I-80.

- f. The City should promote the establishment of riding and hiking trails throughout the community and coordinate with other agencies planning trail systems in the area and region.
- g. Major transmission and fuel lines should be reviewed to ensure compatibility with affected General Plan elements.
- h. Sewer, water and stormwater facilities performance standards shall be maintained as required by the Growth Management Element.
- i. The City shall participate in and/or encourage the following planned capital improvements, as applicable:
 - Installation of ramp-metering hardware at all on-ramp locations on I-80;
 - Reconstruction of I-80/Highway 4 freeway interchange;
 - Construction of Highway 4 Freeway
 - Widening of I-80 to include HOV lanes, Atlas Road to Carquinez Bridge.
- j. Additional transportation policies are included within the Growth Management Element.

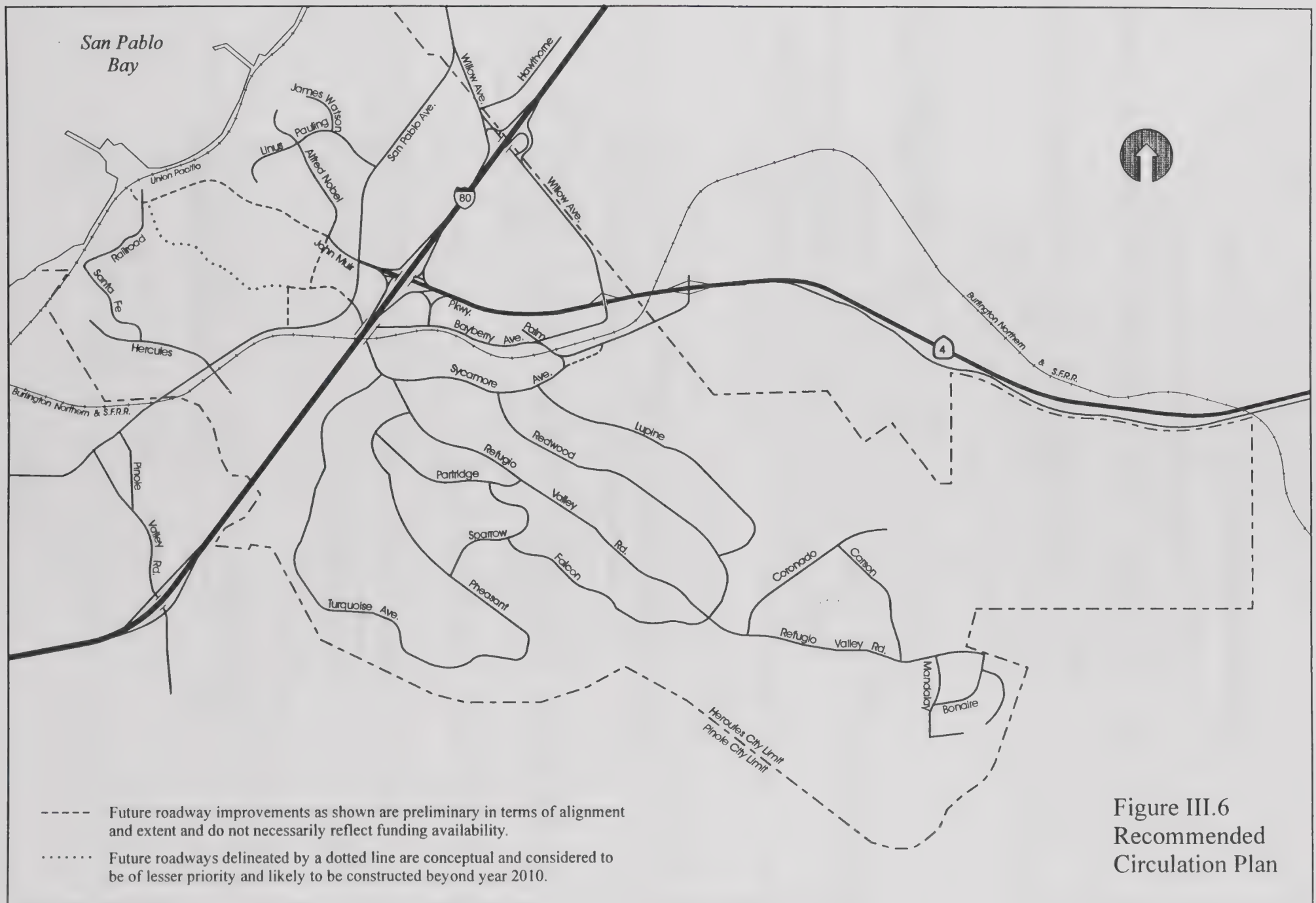


Figure III.6
Recommended
Circulation Plan

3. Proposals and Standards

a. Traffic Circulation

The Circulation Plan (Figure III.6) shows three classifications of traffic facilities:

Freeways, arterials and local collector streets as well as freeway interchanges, railroads, scenic routes, and future highways.

1) Freeways

Freeways are routes designed to carry heavy traffic volumes over long distances. Access is controlled, crossings are grade separated and lanes in opposite directions are separated by medians.

Interstate 80 is a six-lane freeway proposed for widening to eight lanes and Highway 4 is partly a freeway and is planned for expansion to a freeway. Figure III.6 shows the proposed interchanges of these freeways with arterial city streets.

2) Arterial Streets

Arterial streets provide the principal traffic circulation system within the community. They also provide the transition between collector and local streets and the freeway system. Arterials are high volume streets having two or more moving lanes and a parking lane in each direction. They sometimes have median strips and turn lanes and usually have traffic signals at major intersections. The arterial streets in Hercules are San Pablo Avenue, Willow Avenue, Sycamore Avenue and Refugio Valley Road.

3) Local Collector Streets

Local collector streets provide the transition between arterial streets and land uses within the community. The configuration of these streets will depend on the amount of traffic they will carry and the manner in which access is provided to adjoining land uses.

b. Scenic Routes

San Pablo Avenue and views of the upper elevations of the hills surrounding Highway 4 are designated as scenic routes in the City (see Figure III.6).

c. Transit

Convenient and efficient public transit service in the City should be provided to offer an attractive alternative to the automobile. Specifically, the City shall promote the location of a commuter rail station in the Lower Refugio Valley to provide local and regional access to trains running along the Capitol Corridor. Applications for development in the Lower Refugio Valley along the rail corridor should incorporate a mix of commercial, professional office and residential uses, public facilities and high capacity road access suitable to support a commuter rail station in the area. Hercules desires HOV express bus services to El Cerrito, Oakland and/or San Francisco.

D. IMPLEMENTATION

1. Establishment of planning liaison with the Federal, state and regional agencies concerned with transportation to ensure the coordination of their projects with the policies of the circulation element.
2. Designation of a local select system of arterial and collector streets to be eligible for State and Highway Trust Fund monies.
3. Investigation of the use of grant funds from regional, State and Federal agencies such as the Department of Transportation, and the Department of Housing and Urban Development for the provision of specialized circulation facilities such as mass transit, hiking, biking and riding trails, and scenic highways.
4. Designation of rights-of-way in advance of development and encouragement and requirement of dedication of streets, paths and trails as part of the land development process.
5. Establishment of special assessment districts for street improvements, construction of bridges, provision of public transit or parking, etc.
6. Participation in local and regional Transportation System Management (TSM) programs, such as the City's adopted Transportation Demand Management (TDM) Program, which was developed by the West Contra Costa County Transportation Advisory Committee (WCCTAC) and includes guidelines for trip reduction measures.
7. Establish a traffic mitigation fee to be paid by all remaining development projects to offset the needed improvements outlined in the General Plan Circulation Element Transportation Technical Report.

Create a Transportation System Management (TSM) program.

8. Establish a traffic mitigation fee to be paid by all remaining development projects to offset

the needed improvements outlined in the City-Wide Traffic Study.

9. Acquisition of rights-of-way and easements and directly construct improvements using local sources of funds.
10. Review of development proposals in terms of circulation and scenic route policies and proposals. Development proposals along designated scenic routes in the City shall be reviewed in terms of their visual impact and aesthetic compatibility with the scenic corridors objectives. The zoning ordinance shall implement the scenic road and highway designations of the General Plan. Specific development standards for new and expanded development on properties along the scenic corridors designated in the General Plan shall be set forth within a Scenic Road and Highway Overlay District in the Zoning Ordinance. The overlay district shall implement the following objectives:
 - Encourage aesthetically attractive architecture and design of new or expanded structures within the Scenic Road and Highway Overlay District through including provisions for clustering, reducing visual impact of building mass and glare, maintaining important scenic view corridors through the site, and avoiding use of designs and materials that are inconsistent with the visual quality of a scenic corridor.
 - Encourage attractive landscaping of development projects that is consistent with the existing terrain and landscaping of the scenic road or highway, softens the visual mass of building frontages and parking areas, provides attractive usable open space areas within the project, and meets the water conservation requirements of the City.
 - Encourage attractive and low profile signage fitting into the design theme of the buildings and landscape.
11. Support area-wide cooperative efforts to expand public transit service to the City and surrounding areas.
12. Encourage pedestrian and bicycle travel for home-to-work and home-to-local-shopping trips through the provision of pathways and bicycle storage.
13. As part of road construction projects, enforce dust control measures (such as watering graded areas daily) and require that contractors be responsible for the immediate clean-up of any materials spilled on city streets as a result of grading, construction or hauling operations.
14. Plan for construction of the road improvement projects identified in this Element through the City's Capital Improvement Program, and schedule each project according to current/projected congestion at the site of the improvement and the financial condition of the Traffic Mitigation Fund.

15. Continue programs that include:

- Trip reduction goals for private and public development;
- Actions to reduce peak hour private vehicle trips (e.g. flex-time, car pools, support of transit);
- Traffic routing controls;
- Further review of alternative funding sources; and,
- An implementing and enforcement ordinance.
- Alternative financing methods for fee payment which do not put the City at risk but ease the developer impact/burden.

16. There will be a roadway linkage between Refugio Valley west of San Pablo and the residential neighborhoods in the Chelsea by the Bay area. However, this linkage will be constructed using "traffic calming" measures as suggested in the response to comment I-3 on pages VIII.A-78 and VIII.A-79 of the FEIR. This approach would attempt to discourage through traffic by making travel on the Railroad Avenue connection less convenient and more time consuming than would be the case if an arterial linkage were to be constructed.

**HOUSING ELEMENT
OF THE GENERAL PLAN**

**APPROVED BY THE CITY COUNCIL
JUNE 26, 1990**

HERCULES HOUSING ELEMENT

Prepared for:
CITY OF HERCULES

Prepared by:
SEDWAY & ASSOCIATES

Adopted:
June 26, 1990

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I. INTRODUCTION AND PURPOSE

PURPOSE

Housing elements are one of the nine elements of the general plan every California city and county is required by state law to prepare. The housing, land use and circulation elements form the heart of a community strategy to assure orderly growth and provide housing for all economic segments.

In 1977, the California Department of Housing and Community Development (HCD) set forth guidelines which govern the content of housing elements. The regulations covering the housing element have been frequently updated and expanded since the legislation was first enacted. Most generally, the State requires that the housing element include "an identification and analysis of existing and projected housing needs and a statement of goals, policies, qualified objectives, and scheduled programs for the preservation, improvement and development of housing." To maintain up-to-date and relevant goals and policies, state law requires that all housing elements be updated not less than every five years. For cities in the nine Bay Area counties, state law requires that the housing element update occur by July 1, 1990.

This updated housing element has been designed to meet the State of California Housing Element Law (Article 10.6 of the Government Code). It replaces the previous housing element which was adopted in 1984. The housing goals outlined in the previous housing element have been modified and expanded to better address the current housing needs of the community. Several new programs have been adopted and will be implemented over the 1990 to 1995 planning period in an attempt to address the City's share of the region's housing needs for all income categories.

CITIZEN PARTICIPATION

To facilitate participation in the housing element update process, two joint City Council/Planning Commission public workshops were held as well as two Planning Commission public hearings and two City Council public hearings. To ensure that all economic segments of the community were involved, the hearings were advertised in the local newspaper, on various community message boards and on the local cable television station. Further, to obtain public comment, a notice of availability of the draft housing element was mailed out to developers, all community organizations and homeowner groups, and school representatives. The letter invited comments and input. It was mailed immediately after the draft housing element was issued, approximately one month prior to the first joint City Council/Planning Commission public workshop.

CONSISTENCY WITH OTHER GENERAL PLAN ELEMENTS

To ensure that the housing element is consistent with other elements of the general plan, the Planning Director conducted a general review of all new recommended programs. The review showed no significant inconsistencies. The City Council is also currently considering an Economic Development Strategy Plan. Adoption of this Plan calls for updating the Land Use Element of the General Plan. If this moves forward, any minor inconsistencies will be addressed.

II. GENERAL DEMOGRAPHIC AND EMPLOYMENT TRENDS

POPULATION CHARACTERISTICS

From the 1880s to the 1960s, Hercules was a tiny company town, first producing dynamite and then fertilizer. Until the 1970s, the City's population had been relatively stable at a few hundred residents. The plant closed in 1977 and most of the old company houses were demolished. Consequently, although Hercules has been incorporated since 1900, the present city is essentially a new town with a new housing stock and recently arrived residents.

Between 1969 and 1979, the City of Hercules grew from only 252 to 5,963 residents, representing an annual average increase of over 226 percent. This phenomenal growth rate represented the fastest growing city in the State in the late 1970s. As shown in Table 1, since the 1970s, the City's growth has continued to outstrip the region generally. With 14,527 residents at the end of 1988, the City had experienced an average annual growth rate of 15 percent during the later half of the 1980s, compared to only 2.5 percent for the County and 1.4 percent for the entire San Francisco Bay Area. Reflecting the City's relative youth, 48 percent of the families included in a recent household survey had resided in the City for less than four years.¹ The recent growth in the City is largely due to its convenient location in the East Bay, 25 miles northeast of San Francisco, and the availability of large, relatively inexpensive land.

Growth in the City over the forthcoming five years is projected to slow considerably. As shown in Table 2, Hercules is forecasted by the Association of Bay Area Governments (ABAG) to grow from its current population of 16,500 to 18,300 by 1995, a cumulative increase of 11 percent. This is slightly greater than the nine percent growth rate projected for the County as a whole, but well in excess of the 5.7 population growth rate forecast for the nine-county San Francisco Bay region over the same period. Nonetheless, while the City is projected to grow at a faster pace than the region, the inventory of readily developable residential land is diminishing. A complete discussion of the City's available residentially-zoned land is included in Chapter II. Over the next ten years, for example, the City's population growth is expected to average only one percent annually.

ABAG projects that Hercules will add 690 households between 1990 and 1995, an increase of 13 percent. The more rapid rate of household relative to population growth is attributable to national as well as local trends toward decreasing household sizes and increasing rates of household formation caused by higher divorce rates and other factors. This phenomenon is reflected in a larger number of households needed to house the same size population.

¹ Based on survey of 450 households conducted for the City by Moore, Iacofano Goltsman, January, 1990.

TABLE 1
POPULATION GROWTH, 1959-1988

Year	City of Hercules	Average Annual Percent Increase	Contra Costa County	Average Annual Percent Increase	Bay Region	Average Annual Percent Increase
1959	310	--	409,030	--	3,638,939	--
1969	252	-1.9%	558,389	3.7%	4,628,199	2.7%
1979	5,963	226.6%	656,380	1.8%	5,179,784	1.2%
1985	10,089	11.5%	721,655	1.7%	5,626,755	1.4%
1988	14,527	14.7%	775,478	2.5%	5,865,353	1.4%

Sources: U.S. Census, Department of Finance, Sedway & Associates.

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Date Printed: 03/06/89

TABLE 2
HERCULES AND CONTRA COSTA COUNTY
DEMOGRAPHIC PROFILE

	HERCULES (1)			CONTRA COSTA COUNTY		
	1990	1995	% CHANGE	1990	1995	% CHANGE
POPULATION	16,500	18,300	10.9%	790,000	861,000	9.0%
EMPLOYED RESIDENTS	9,400	10,400	10.6%	407,800	456,700	12.0%
EMPLOYMENT	2,150	3,030	40.9%	292,700	334,710	14.4%
# OF RESIDENT COMMUTERS (2)	7,250	7,370	1.7%	115,100	121,990	6.0%
% OF RESIDENT COMMUTERS (3)	77.1%	70.9%	-8.1%	28.2%	26.7%	-5.4%
HOUSEHOLDS	5,300	5,990	13.0%	303,690	334,390	10.1%
HOUSEHOLD SIZE	3.1	3.0	-2.3%	2.6	2.5	-1.2%
HOUSEHOLD INCOME (4)	\$59,600	\$64,000	7.4%	\$49,600	\$52,400	5.6%

(1) Data extends beyond boundries of city to sphere of influence.

(2) Number of employed residents who commute outside Hercules and Contra Costa County.

(3) Percent of employed residents who commute outside Hercules and Contra Costa County.

(4) Mean household income in constant 1988 dollars.

SOURCE: ABAG Projections 1990, Sedway & Associates January 1990.

[hercdemo,eca, 1/90]

Date Printed: 07/02/90

ABAG's household growth projections for Hercules may be overly conservative, however. Over the last six years, an average of over 500 new households have been added annually. Further, 1,100 units of housing have been approved and/or are under construction as of September 1989.

As shown on Table 2, ABAG estimates that the average household size in Hercules is 3.1 persons, compared to an average of 2.6 persons for the County as a whole. The household survey results indicated a slightly greater average household size of 3.36 persons. Between 1990 and 1995, ABAG projects the City's household size will decrease to an average of 3.0, with the Countywide average declining to 2.5. The larger than average household size in Hercules is attributable to the predominance of detached single-family homes, typically with three or four bedrooms, with the majority (approximately 51 percent) of the households comprised of families with children.

Employment Trends

Contra Costa County expects to gain 42,000 new jobs between 1990 and 1995, an increase of 14.4 percent. Of these, an estimated 880 will be in Hercules, representing a 41 percent increase over the current job base of 2,150. By far the largest employer in the City is Bio-Rad Laboratories, a light industrial company which manufactures and sells chemical and clinical equipment. Bio-Rad currently employs 350 workers at the North Shore Industrial Park in Hercules, up from 250 workers prior to the October 17, 1989 earthquake which damaged the company's Richmond facility. Discussions with Bio Rad's Human Resources Department indicated that there are no immediate plans to relocate these workers. The Company has substantial room to expand, and plans on developing more space in the next several years. Other large employers include Pacific Refining Company (116 workers), Mechanics Bank (110 workers), the school district (80 workers), and 52 full-time City employees.

In spite of the local growth in employment, the net outflow of employed residents compared to local jobs will remain substantial. In 1990, there was a net outflow of jobs, or deficit in local employment, of 7,250, suggesting that over 77 percent of the City's employed residents commute to work outside the City. In an informal survey of purchasers in the new subdivisions, a substantial percentage of the City's homebuyers were found to work in San Francisco and Oakland. The percent of out-commuting is projected by ABAG to decline to 70 percent over the coming five years, but the City will retain its predominately bedroom community character.

The City is actively promoting programs to generate new employment and diversify the local economy. Substantial amounts of vacant, developable commercial land are likely to add to local employment opportunities in the future. Enhancing the local tax base and aiming at stabilizing the current jobs/housing imbalance is a paramount goal of the City. In addition to contributing to the local tax base, promoting a viable business base will add to the availability of convenient local shopping and services, assist in reducing overall commuting, which generally will contribute to the quality of life available to the City's residents. As such, it is less appropriate for the City to take a proactive role in converting vacant, commercially zoned land for residential use than in communities faced with limited opportunities to house new workers.

Household Incomes

Average household incomes in Hercules are estimated by ABAG to be \$59,600 in 1990 (1988 dollars), compared to \$49,600 for Contra Costa County. The higher than average income is attributable to the large number of dual income households (the household survey found an average of 1.6 workers per household) as well as the relatively easy access to higher paying employment opportunities in San Francisco, compared to the central Contra Costa County cities. Household incomes were also estimated in the household survey. Based on the survey results, the average and median household income was found to fall in the \$51,000 to \$60,000 range, consistent with the ABAG estimates. The City's incomes are projected to remain above the County average for the upcoming five-year period.

The average household incomes for renters versus owners in the City is difficult to estimate. The survey results indicated that 91 percent of the City's households are owner-occupants. The manager of the City's one apartment project indicated she requires tenants to have incomes of four times the monthly rent rate, or approximately \$33,600 per year. A portion of the City's condominiums and single-family homes are also rented. While the household incomes of these renters is not currently available, they are presumed to be higher on average than that of the apartment dwellers due to the higher rents charged for these larger units.

Ethnic Composition

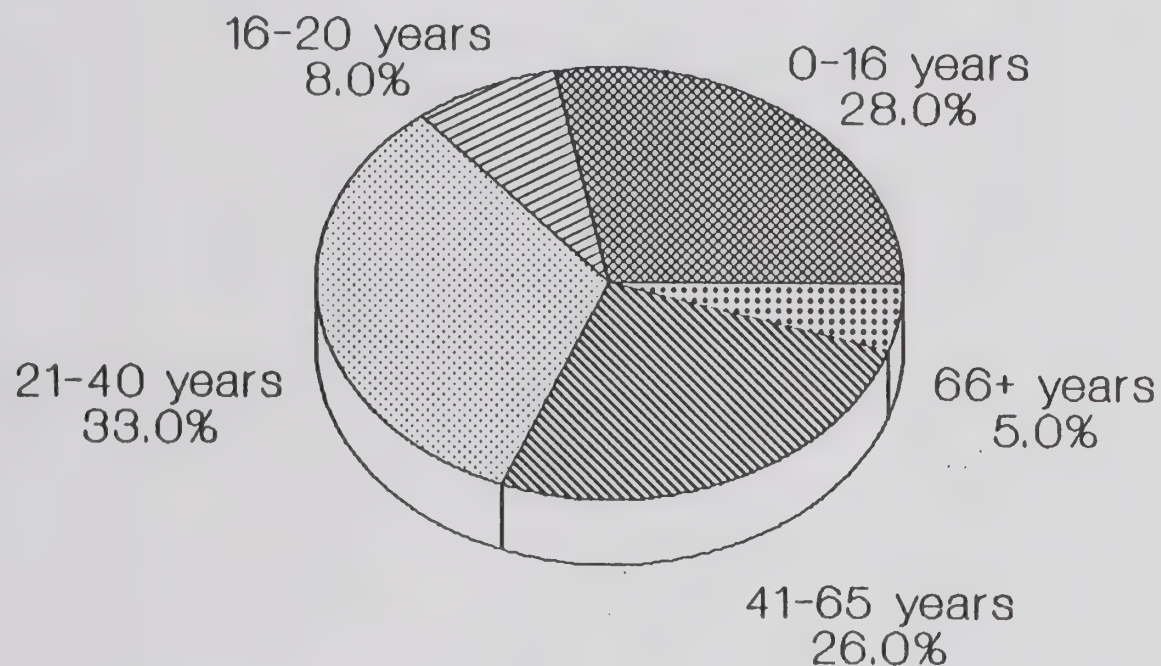
The City has a diverse ethnic population. At the time of the 1980 Census, 46 percent of the City's population was white, 37 percent Asian, 12 percent black, with the remaining six percent comprised of other groups. The ethnic composition of the City continues to be diverse. Of those households recently surveyed, 46 percent were white, 23 percent Filipino, 15 percent other Asians, six percent black, five percent hispanic, and the remaining four percent other. These statistics indicate the increasing representation of Asians in the City, and the decline in the proportion of the City's black population.

Age of Population

In 1980, the City's population was younger than most of the surrounding communities. The City's median age was 28.4 years, compared to 31.5 years in Contra Costa County and 31.3 in the Bay Area. Only 2.6 percent of the City's population was senior citizens, compared to 9.3 percent for the County and 10.3 percent for the region.

The age breakdown has changed somewhat for the City since 1980. As indicated in Figure 1, 28 percent of the City's population is under the age of 16, eight percent are between the ages of 16 and 20, 33 percent fall into the 21 to 40 age bracket, 26 percent are between the ages of 41 and 65, and five percent are over the age of 65 years. By comparison, ABAG estimates that nine percent of the Countywide population is over the age of 65, and 36 percent are under 20 years of age. This data suggests that the City is comprised primarily of young families. Nonetheless,

Figure 1
Distribution of Population by Age
Hercules 1990 Survey Results



Source: Moore Iacofano Goltsman;
Sedway & Associates, February 1990

with 26 percent of the population in the 41 to 65 age bracket, and five percent over the age of 65, the City's population is aging more rapidly than the County.

To summarize, the City's demographic profile is made up of a large proportion of moderate to above moderate-income young families. Due to the generally homogenous housing stock, with all but one new subdivision being sold for between \$100,000 and \$300,000, the income ranges of the City's households is relatively narrow compared to other communities with a wider variety of housing by type and age. The City is also gaining an increasing number of elderly residents, and this trend is likely to continue over the next decade.

III. HOUSING AND NEIGHBORHOOD CHARACTERISTICS

Housing Production Trends

At the end of 1988, 76 percent of Hercules' housing stock was comprised of single-family homes, half of which were developed after 1980. During the 1980s, single-family construction rates constantly escalated, with 39 homes added in 1981, and 448 new homes in 1988 (see Table 3). Between 1980 and 1989, 1,098 multifamily units were added, 84 percent of which were added in the last four years. The number of new multifamily units also increased rapidly in recent years. In fact, multifamily housing contributed nominally to the rate of construction in the early 1980s. Within the last five years, by comparison, about half of all the units built in Hercules were multifamily. The number of new multifamily units peaked in 1987, when 385 units were constructed. Preliminary figures provided by the City indicate that an additional 616 units were added in 1989, of which 358 were single-family homes and 258 were multifamily units.

In September 1989, there were 333 residential units under construction and 763 units approved for construction. Of these remaining units, 36 percent were multifamily units and 64 percent were single-family attached and detached homes.

The 84-unit Willow Glen apartment project, developed in 1986, represents the only exclusively rental development in the City. In addition, a small percentage of the City's condominium and single-family homes are rented. In 1980, eight percent of the City's housing stock was found to be renter occupied. This same percentage was reported in the recent household survey. Based upon the percentage of owner-occupied tax exemptions filed by Hercules residents, an estimated 25 percent of the housing stock is rented. This larger percentage likely overstates the percentage of renters, however, as some owner-occupants may not be aware of the tax exemption.

Housing Prices and Rent Levels

The average home resale price in Hercules was \$153,810 during 1989, based upon information compiled by the West Contra Costa County Board of Realtors. Table 4 summarizes average home resale prices in Hercules and surrounding communities. The majority of new subdivisions, which generally sell for a higher price, are not represented in the Board's multiple listing service data, as most are sold directly through private sales offices. These figures illustrate that the City's resale housing prices are quite affordable relative to the Bay Area in general, where the median home price was \$247,000 in December, 1989. The City's housing prices are somewhat higher than Pinole and El Sobrante, but considerable more affordable than the City of El Cerrito which is located less than 10 miles south. Appreciation rates are shown to be 5.4 percent from 1988 to 1989, down from 10.4 percent the previous year. These increases are considerably less than the figures registered for the surrounding areas, where home resale prices increased from between 14 and 22 percent last year.

TABLE 3
HISTORIC GROWTH OF HOUSEHOLD AND HOUSING SUPPLY
CITY OF HERCULES

1. TOTALS

YEAR ENDING	HSHLD POPULATION	# HSHLDS	TOTAL # HSG UNITS	% VACANT	HOUSING UNITS		
					SINGLE	MULTI	MOBILE HOME
1980	6,476	1,926	1,987	3.1%	1,898	85	4
1981	6,562	1,961	2,026	3.2%	1,937	85	4
1982	6,789	2,025	2,096	3.4%	2,007	85	4
1983	7,317	2,175	2,248	3.2%	2,138	106	4
1984	8,675	2,604	2,658	2.0%	2,392	262	4
1985	10,089	3,053	3,110	1.8%	2,676	430	4
1986	11,650	3,563	3,588	0.7%	2,993	591	4
1987	12,589	3,995	4,270	6.4%	3,290	976	4
1988	14,527	4,618	4,925	6.2%	3,738	1,183	4
					76%	24%	0%

2. ADDITIONS

DURING THE YEAR:	HSHLD POPULATION	# HSHLDS	TOTAL # HSG UNITS	% VACANT	HOUSING UNITS		
					SINGLE- FAMILY	MULTI- FAMILY	MOBILE HOME
1980							
1981	86	35	39	0.1%	39	0	0
1982	227	64	70	0.2%	70	0	0
1983	528	150	152	-0.1%	131	21	0
1984	1,358	429	410	-1.2%	254	156	0
1985	1,414	449	452	-0.2%	284	168	0
1986	1,561	510	478	-1.1%	317	161	0
1987	939	432	682	5.7%	297	385	0
1988	1,938	623	655	-0.2%	448	207	0
TOTAL	8,051	2,692	2,938	3.4%	1,840	1,098	0
AVERAGE							
1980-88	1,006	337	367	0.4%	230	137	0
					63%	37%	0%
AVERAGE							
1986-88	1,479	522	605	1.5%	354	251	0
					59%	41%	0%

Sources: California State Dept. of Finance, Sedway & Associates.

Note: Population estimates reported by the State Dept. of Finance are actually as of January 1st of each year, but for purposes of the above analysis are treated as if they are on December 31st of the prior year.

Date Printed: 03/06/89

[hhg1, mh1, 1/90]

TABLE 4
ANNUAL AVERAGE HOME PRICES (1)
WEST CONTRA COSTA COMMUNITIES AND BAY AREA

Community	1985	Percent Increase 1985-1986	1986	Percent Increase 1986-1987	1987 (2)	Annualized Percent Increase 1987-1988 (3)	1988	Percent Increase 1988-1989	1989
Hercules	N/A	N/A	N/A	N/A	\$138,621	10.4%	\$145,861	5.4%	\$153,810
Pinole	N/A	N/A	N/A	N/A	127,544	25.3%	143,672	20.3%	172,841
El Cerrito	N/A	N/A	N/A	N/A	174,041	46.7%	214,676	14.4%	245,639
El Sobrante	N/A	N/A	N/A	N/A	128,723	7.5%	133,576	22.3%	163,305
West Contra Costa	100,349	8.2%	108,538	6.9%	116,049	12.5%	130,505	16.2%	151,592
Bay Area (4)	146,451	14.4%	167,612	4.4%	175,064	33.6%	233,921	10.1%	257,535

(1) Based on Multiple Listing Service (MLS) sales of single-family homes, townhomes, and condominiums.

MLS data includes many, but not all, residential sales. It does not include sales of many newly constructed homes, particularly high end houses.

(2) 1987 figures for Hercules, Pinole, El Cerito and El Sobrante are for the last 6 months of the year only.

(3) The annualized increase in home price is calculated by dividing the percentage change by 6 months and multiplying by 12 months. For Hercules, Pinole, El Cerrito, and El Sobrante only.

(4) Median home prices based on December MLS sales data from the following boards: Berkeley, Contra Costa, Los Altos-Los Gatos-Saratoga-Mountain View-Sunnyvale, Marin, Palo Alto, San Jose, Southern Alameda, Oakland, and San Francisco.

Source: West Contra Costa Board of Realtors; California Board of Realtors; Sedway & Associates. January 1990.
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Date printed: 03/06/89

Home prices in the City's new developments generally range from about \$100,000 to \$200,000 for new condominium units, and from about \$200,000 to \$390,000 for new detached single-family homes. Table 5 summarizes recent sales prices for new or recently completed projects. Demand for these units has been strong based on reported absorption and appreciation rates. Sales agents marketing the newer projects reported appreciation rates for most of the new condominiums and duets was about 25 percent last year. Tiffany Ridge, a single-family subdivision developed starting in 1977, has had average prices increase from \$62,000 to \$205,000, or an average annual increase of 25 percent. Appreciation rates were lower for the Tiffany Ridge Chateau project. With sales prices in the \$350,000 to \$400,000 range, this 77-unit development represents the highest home prices in Hercules. Appreciation rates over the last four months averaged two to three percent, representing an annualized increase of six to nine percent.

Historic rental data is not relevant for Hercules. Rents in the Willow Glen Apartment project, which has all two-bedroom units, range from \$710 to \$745 per month. As indicated in Table 6, a new condominium project, Refugio Valley Village, will be renting all of its 220 units for a few years. Anticipated rents for this development range from a low of \$900 for a one-bedroom apartment to \$1,200 for a three-bedroom unit. Additionally, between five and ten percent of the occupied condominium units surveyed were found to be rented. Rents in these units are estimated to range from about \$900 to \$1,200 per month.² (Additional condominiums were also contacted, but rental information was not available.)

Vacancy Rates

In 1988, the Department of Finance figures indicated that the City had a residential vacancy rate of approximately six percent. However, due to the large number of new homes being marketed, this figure likely overstates the City's stabilized vacancy rate; that is, the vacancy rate registered when all new projects have been leased up or sold. Vacancy rates at Willow Glen generally average five to six percent, due to an average turnover of one to two units per month. Prior to the rapid increase in local construction, vacancy rates in the City (pre 1985) were about three percent. A market equilibrium is generally defined as a vacancy rate of about five percent, which allows for normal turnover of units.

Housing Conditions

As previously discussed, the City of Hercules has a predominantly new housing stock. In 1980, 35 percent of the existing units were built within the previous year, and 60 percent of the current 4,925 units have been constructed since 1980. A special 1975 County Census listed only one unit in Hercules as "unsound". To substantiate the generally good condition of the housing stock, an informal windshield survey was conducted of all of the City's neighborhoods. In general, homes were found to be well maintained and did not evidence signs of deterioration. As such,

² Based on discussions with leasing agents.

TABLE 5
NEW DEVELOPMENT PROJECTS
HERCULES

Project	Location	Type	# of Units	Unit Type	Sq.Ft.	Price	Absorption Per Month	Comments/Buyer Profile
CURRENTLY FOR SALE:								
Forest Park		Condo	136	2 BR	815 - 1,065	\$109,000 - 138,000	30	Retired, first time buyers, generally two incomes
Bay Pointe		Condo	269	2 - 3 BR	800 - 1,200	\$130,000 - 159,000	10 - 12	Small families and singles.
Laurelwood		Condo	94	2 - 3 BR	1,471 - 1,738	\$204,990 - 225,990	7	Small families and singles. Many from SF.
Caprice *		TH	75	2 - 3 BR	1,450 - 1,800	\$180,000 - 220,000	8 (antic.)	Expect people to move from Bay Pointe.
Westwood		Duets	192	2 - 3 BR	1,415 - 1,750	\$187,000 - 228,000	3 - 6	Small families, young couples.
Mandalay		SF-D	250	3 - 5 BR	1,800 - 2,600	\$220,000 - 300,000	8	Larger families. Sometimes 2 buyers.
Tiffany Ridge Chateau		SF-D	77	4 - 5 BR	2,500 - 2,800	\$342,000 - 392,000	12	Many buyers from Hercules.

* Should begin marketing in May 1990.

Sources: Sedway & Associates

[newdev. eca]

Date Printed:

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TABLE 6
SELECTED SURVEY OF RENTAL HOUSING
CITY OF HERCULES

Project	Type	# of Units	# Rented	Unit Type	% Rented	Sq.Ft.	Rent	Comments
Willow Glen	Apt	84	84	2 BR	(100%)	822-828	\$710 - 745	Require household income 4 times rent.
The Village	Condo	220	220	1 BR	(20%)	750	\$900	Under construction.
				2 BR	(60%)	982	\$1,000	Expect to begin occupancy in 1991.
				3 BR	(20%)	1,116	\$1,200	Will convert to condominiums after 1996.
Laurelwood	Condo *	94	5	2 BR	N/A	1,471	\$1,100	Rent is an estimate from the sales office.
				3 BR	N/A	1,738	\$1,200	
Glenwood	Condo *	228	12	2 - 3 BR	N/A	683 - 1,249	\$900	Rent is an estimate from the sales office.
Forest Park	Condo *	136	12	2 BR	N/A	815 - 1,065	\$800 - 900	Rent is an estimate from the sales office.
Bay Pointe	Condo *	267	2	2 - 3 BR	N/A	800 - 1,200	N/A	
Wildwood	Condo *	150	7	2 - 3 BR	N/A	1,000 - 1,400	N/A	
Devonwood	Condo *	168	2	2 BR	N/A	1,015 - 1,185	N/A	
Westwood	Duets *	192	0	2 - 3 BR	N/A	1,415 - 1,750	N/A	
Refugio Valley	SF-D *	321	14	3 - 5 BR	N/A	1,800 - 2,600	N/A	Includes Mandalay and additional Shea Homes in Refugio Valley.
Total Rented			358					

* For-Sale projects which included some individual rental units, were estimated to have approximately 0%-5% rented, based on discussions with sales agents or project managers. Does not represent an exhaustive inventory of all rented units.

Source: Sales agents, Sedway & Associates

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Date Printed: 07/03/90

a housing rehabilitation program is not of high priority. However, it should be noted that the City does offer home maintenance information to interested owners upon request.

Potential Land Available For Housing

Table 7 provides a summary of vacant land which may be appropriate for future residential development. Figure 2 provides a location map of the vacant sites. (Excluded are the 763 approved housing units which are not yet under construction). The inventory of vacant land suitable for residential development was compiled by the Planning Department in February, 1990. As shown, there are currently about 36 acres of vacant land zoned for residential uses. These parcels are likely to accommodate approximately 79 units.

An additional 725 acres of land may have rezoning potential, or are located in the unincorporated County. The sites in the City limits have commercial zoning and may be appropriate for a mixed-use project which includes a residential component. As noted earlier in the report, due to a primary goal of retaining future job growth potential in the City, it is not recommended to rezone these parcels to allow for an exclusively residential development. It is assumed that 50 percent of the mixed-use sites are developed with housing at R-3 densities (17 units per acre). The Hercules Inc. property, which has an underlying R-1 zoning, is projected to have 50 percent of the property developed at the R-1 density of about four units per acre. Four to six acres of land adjacent to the City Center are assumed to be developed at a R-5 density of 50 units per acre.

Outside the City limits are an estimated 1,365 acres of land within the City's sphere of influence by the Local Agency Formation Commission. That is, these acres are deemed appropriate for future annexation into the City of Hercules. Of this acreage, residential potential exists in the 635-acre Franklin Golf Course area. Future plans for this area include a hotel, as well as an estimated potential for a mix of residential types totalling between 700 and 1,156 units. The annexation of the acreage has been initiated, however due to the lack of infrastructure to the area, as well as other factors, development of this area is not likely to commence within the coming five years. As outlined in the program section of the housing element, the City will adopt appropriate mixed-use zoning and general plan designations for sites deemed appropriate for some residential uses. The annexation of the acreage was initiated in 1986 through a land use policy change in the general plan and EIR. The City applied to LAFCO for annexation; however, a property-sharing agreement was not rendered until May 1990. A supplemental EIR is being completed and annexation is anticipated to occur in early 1991.

The conclusions of the vacant land inventory are that there is limited land that is readily available for residential development. Additional units may be accommodated on parcels of land currently zoned for commercial uses, on publicly-owned property or in an area that is currently outside the City limits. Development of these parcels within the next five-year period will likely be limited.

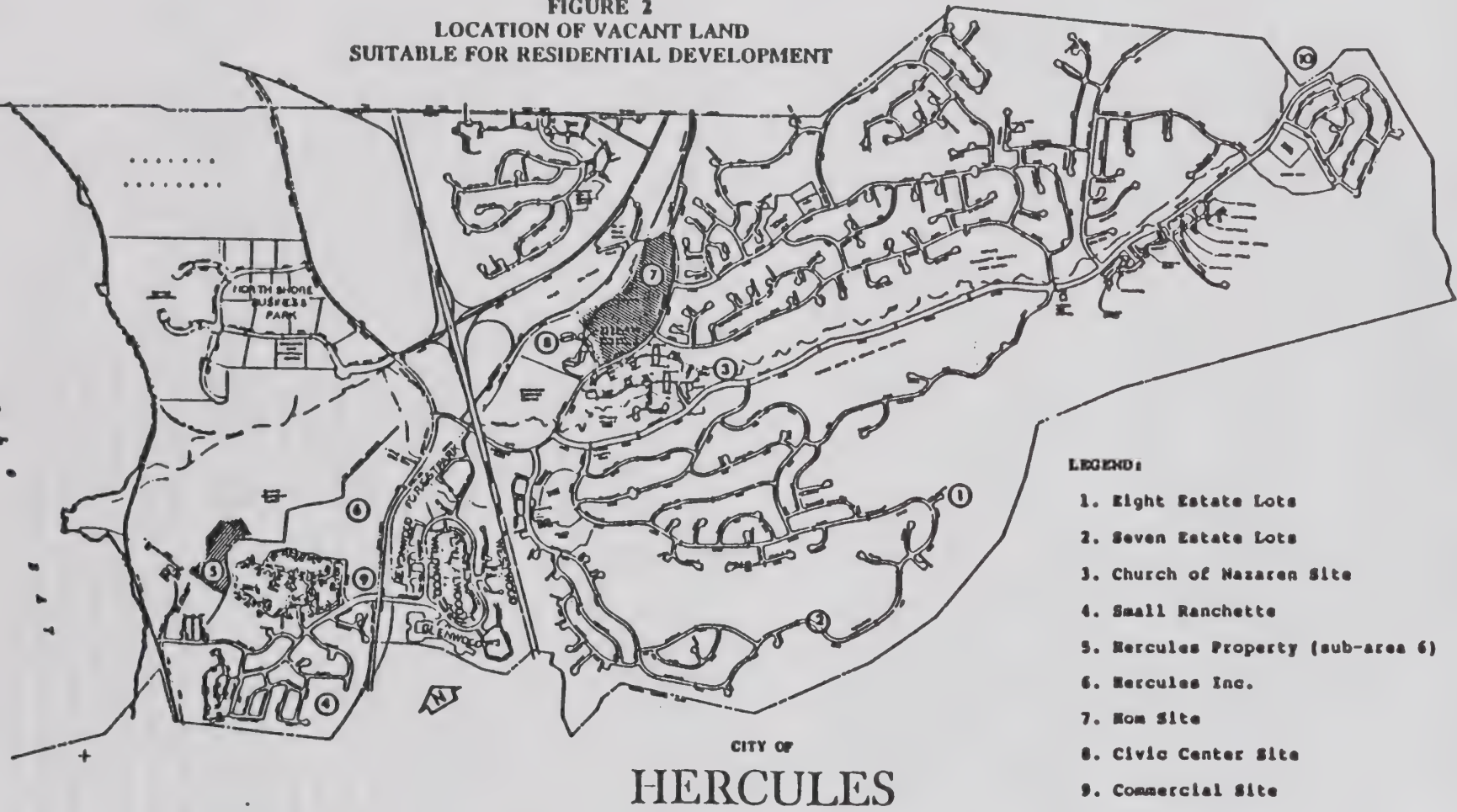
TABLE 7
INVENTORY OF VACANT LAND
SUITABLE FOR RESIDENTIAL DEVELOPMENT
FEBRUARY 1990

	Vacant Land (Acres)	Current Zoning	Development Potential (Units) **
(1) LAND WITHOUT DEVELOPMENT APPROVALS:			
Infill Lots			
Estate Lots	Approx. 23.0	RE1/RE1/2	15
Church of the Nazarene Site	5.0	R2	50
Small Ranchette	7.9	R1	14
Subtotal:	35.9		79.0
(2) LAND WITH REZONING POTENTIAL:			
Hercules Properties Inc. (a) (Sub-area 6)	11.9	M	88
Hercules Inc. (b)	41.0	R1	82
Hom Site (b)(c)	25.0	CR	212
Civic Center Site (d)	4 - 6	CR	200 - 300
Commercial Site (Hercules at San Pablo) (b)(c)	6.6	CH	56
Franklin Canyon Golf Course Area (In Unincorporated Sphere of Influence)	635.0	Mix of Residential	1,156
Subtotal: (e)	724.5		1,844
TOTAL DEVELOPMENT POTENTIAL: (f)	760.4		1,923

Notes:

- (a) Based on Specific Plan and EIR, prepared for 271.4 acre site.
- (b) Sites are recommended for new mixed-use zoning designations.
Assumes 50 percent of mixed-use sites developed with residential uses.
- (c) Assumes site developed at medium-high density zoning (17 units/acre).
- (d) Possible housing site adjacent to City Hall. Parcel is 15 acres; only a small portion is available for rezoning to residential use. New higher density zoning is assumed.
- (e) Where ranges are provided the midpoint is used.
- (f) Includes land zoned for non-residential uses.
- ** Based on zoning designations within General Plan
Designations R1= low density residential (approx. 4 units/acre);
R2= medium density residential (10 units/acre); R3 = medium high density (17 units/acre); R4= high density (30 units/acre);
R5= recommended 50 units/acre.

FIGURE 2
LOCATION OF VACANT LAND
SUITABLE FOR RESIDENTIAL DEVELOPMENT



Source: Hercules Planning Department, Sedway & Associates.

Revised January 1980
Prepared by HGA CONSULTING San Francisco

IV. SPECIAL HOUSING NEEDS

Homeless

The Contra Costa Social Services Department estimates that approximately 5,000 to 6,000 people are homeless over the course of a year in the County. Conversations with the Hercules Police Department, the Richmond Mission Center, and the Contra Costa Social Services Department suggest that fewer than 20 people from Hercules are homeless in a given year. There are no facilities to house the homeless in Hercules, and service providers in the County did not have any statistics regarding the sex, age or marital status of the homeless from Hercules.

The major homeless shelters in Contra Costa County are the Richmond Mission Center and the armories in Concord and Richmond. The Richmond Mission Center, a Christian transitional homeless shelter, can accommodate 90 single males and 143 women and children per night. During the peak period at the end of the month, the Mission turns away 25 to 30 men and three to five families per night. The armories' emergency homeless shelters are open from 5:00 pm to 7:00 am during the winter months only. According to staff at the Social Services Department, 1,600 individuals stayed at the two facilities in 1989, of which approximately only five were from Hercules. These bunker-like facilities house mostly single males; according to one program director, many women do not feel comfortable staying in the armories.

In order to alleviate the homeless problem, the County is currently planning to build a year round emergency facility with the capacity to house 56 people per night. Because Hercules is a small city without a large homeless population and few services for this population, it is possible that the City could provide financial support for this new shelter and other facilities in the area.

Female-Headed Households

The 1980 Census reported that there were 1,753 households in Hercules, and 168 or 10 percent of these were female-headed. Of these 168 female-headed households, 20 percent were headed by single parents. Assuming the same proportions, there would be approximately 530 female-headed households in 1990. However, given the characteristics and costs associated with the majority of new housing, the proportion of female-headed (single-income) households has likely declined. During 1989, 83 households with 167 persons received assistance from Aid to Families with Dependent Children (AFDC). A pregnant woman on AFDC can receive a maximum grant of \$341 per month and a single parent with two children can receive a maximum grant of \$694 per month. Given the cost of housing in the City, these families would likely need to share housing, or live with relatives.

There are several shelters in Contra Costa County that provide assistance to abused women and children. The Battered Women's Alternative can house eight families and when necessary they refer women to "safe" homes throughout the County. During 1989, the Battered Women's

Alternative received 46 calls from women in living Hercules. Additionally, a seven-unit family shelter recently opened up in Pittsburgh and the Battered Women's Alternative in planning to open a 16-unit transitional shelter.

Female-headed households, especially those that are elderly, low-and moderate-income, victims of domestic violence, or single parents, face many difficulties in finding adequate housing. The City of Hercules could improve the housing situation for households headed by women by establishing a shared housing program to help make housing more affordable to single women.

Elderly

Hercules has historically had a lower percentage of seniors than the County as a whole. In 1980, 2.6 percent of Hercules' population was over 65, compared to 9.3 percent of Contra Costa County's population. (See Table 8-A) According to the Census, over 65 percent of the elderly in Hercules are Asians and Pacific Islanders. Hercules' elderly population is increasing in real numbers as well as a percentage of the total population. In 1980, 155 people were over the age of 65. According to a recent survey conducted by MIG, the elderly population has increased to 5 percent of Hercules' total population, or 825 people. The survey also found that retirees comprise 43 percent of the households with incomes below \$31,000 and 48 percent of the households with income below \$20,000.

As indicated in Table 8-B, in 1980, 75 percent of the senior population lived with other relatives or non-relatives, 15 percent were householders (heads of households who may be living alone or with others), 5 percent lived with a spouse. None lived in group quarters. Only 5 percent of the total senior population lived in rental units. The majority of the elderly in Hercules are non-householders living with other relatives. One can thus assume that most of the elderly live with their children or grandchildren in extended family households.

Hercules has no independent senior apartments, congregate care facilities, or skilled nursing homes. There are eight board and care homes in the City with a total of 44 beds, of which 17 may be used by non-ambulatory residents. Five of the homes accept some residents on SSI. Several of the board and care homes have vacancies. At present, the need for this type of senior housing is adequately met.

According to the Senior Information Center, there are only three independent senior housing complexes in West County. The closest is Bay Park, a 96 unit facility in Pinole, which has very few vacancies. The only low-income housing complex is Eskaton H. Shirley Manor in El Cerrito. Currently there is a waiting list of about 300 people for this 63 unit complex. Finally, Creekside in San Pablo has 117 one and two bedroom units and 18 vacancies.

TABLE 8-A
Age of the Population

<u>Age</u>	<u>Hercules</u>		<u>Contra Costa County</u>		<u>Bay Area</u>	
65 years and older	155	2.6%	60,844	9.3%	533,017	10.3%
Total population	5,936	100.0%	656,380	100.0%	5,179,784	100.0%

TABLE 8-B
Persons 65 or Older by Household Type, 1980

<u>Age</u>	<u>Hercules</u>		<u>Contra Costa County</u>		<u>Bay Area</u>	
<u>Family Household</u>						
Householder	24	15.0%	20,958	34.0%	169,903	32.0%
Spouse	8	5.0%	13,776	23.0%	107,260	20.0%
Other Relatives	113	73.0%	5,512	9.0%	51,282	10.0%
Non-relatives	3	2.0%	282	0.5%	3,432	0.6%
<u>In Non-Family Household</u>						
Male Householder	2	1.0%	3,386	3.0%	35,611	7.0%
Female Householder	5	3.0%	13,423	22.0%	122,673	23.0%
Non-relatives	0	0%	477	0.8%	6,322	1.0%
<u>In Group Quarters</u>						
Inmate of Institution	0	0%	2,809	5.0%	27,854	5.0%
Other	<u>0</u>	<u>0%</u>	<u>221</u>	<u>0.4%</u>	<u>8,680</u>	<u>2.0%</u>
	155	100.0%	60,844	100.0%	533,017	100.0%

Source: U.S. Census 1980 (STF-1)

Note: Percentages may not add up to 100 percent due to rounding.

In 1980, a majority of the elderly in Hercules lived with their children or other relatives. However, according to the director of the Senior Center, a number of Hercules' residents have expressed an interest in an independent senior housing complex. Many elderly would prefer to live independently but still close to their family. At this time there are no facilities in Hercules to meet this need. Additionally, judging by the one to two year waiting list at Eskaton H. Shirley Manor and the high percentage of low-income households with retirees in Hercules, there is a great need for affordable elderly apartments in both West Contra Costa County and the City.

Although the senior population has been increasing, there is no senior housing other than board and care houses. The City may want to consider promoting or sponsoring the development of a senior housing complex, initiating a senior shared housing program, or encouraging the addition of second-units to existing homes. It is also recommended that a percentage of these units be affordable to the City's lower income elderly residents.

Disabled

The United Way estimates that there are 8,287 developmentally disabled and brain-damaged individuals living in the County. Based on this statistic, approximately one percent of the population, or 173 residents are developmentally disabled and/or brain-damaged. The above statistic does not account for individuals suffering from other types of disabilities. The 1980 Census indicates that 1.1 percent of the persons between the age of 16 and 64, and 26.1 percent of the persons 65 years of age and above had transportation disabilities, meaning there were about 40 elderly Hercules residents with mobility limitations and special housing needs (i.e. ramps, cut curbs, ground floor housing). (See Table 9-A and 9-B.) The percentage of residents 65 and older with a transportation disability in Hercules is much greater than the percentage in Contra Costa County (14.2%) and the Bay Area (14.6%).

There are few disabled individuals living independently in Hercules due to the lack of affordable housing. From conversations with the East Bay Regional Center, the Association for Retarded Citizens, and the Independent Living Center, it appears likely that most of the disabled individuals in Hercules live with relatives. Those that live independently are probably able to work and do not require public assistance.

There are no disabled housing facilities in Hercules and the one completed apartment complex is not wheelchair accessible. There is also a lack of wheelchair accessible housing in the County. For example, the Chilpancigo, a 25 unit apartment complex in Pleasant Hill, currently has a four to five year waiting list for the handicapped accessible units.

As the proportion of elderly in the City increases and as disabled children get older, disabled accessible housing will become an even greater need. New state regulations require all new rental projects to be handicap accessible.

TABLE 9-A
Non-Institutional Persons 16 to 64
By Public Transportation Disability

<u>Status</u>	<u>Hercules</u>		<u>Contra Costa County</u>		<u>Bay Area</u>	
With Public Transportation Disability	41	1.1%	7,408	1.7%	54,184	1.5%
No Public Transportation Disability	<u>3,832</u>	<u>98.9%</u>	<u>431,770</u>	<u>98.3%</u>	<u>3,456,382</u>	<u>98.5%</u>
Total	3,873	100.0%	439,178	100.0%	3,510,566	100.0%

TABLE 9-B
Non-Institutional Persons 65 and over
By Public Transportation Disability

<u>Status</u>	<u>Hercules</u>		<u>Contra Costa County</u>		<u>Bay Area</u>	
With Public Transportation Disability	40	26.1%	8,192	14.2%	73,066	14.6%
No Public Transportation Disability	<u>113</u>	<u>73.9%</u>	<u>49,539</u>	<u>85.8%</u>	<u>428,927</u>	<u>85.4%</u>
Total	153	100.0%	57,731	100.0%	501,933	100.0%

Source: U.S. Census 1980 (STF-3)

Large Families

According to the Census, households of five or more persons are considered to be large. State housing standards indicate that five-person households need three or four bedrooms and six-person households need at least four bedrooms. The Census provides data on large households as opposed to large families.

In 1980, 204 individuals lived in five-person households of which eight percent lived in rental units. Another 158 individuals lived in households with six or more persons. Of this population, ten percent rented their homes. The percentage of the population living in large households is substantially higher in Hercules (21%) than the County (11%) and regional average (10%). (See Table 10)

In 1980, the average number of rooms per dwelling unit was 5.6 in Hercules, compared with 5.5 in Contra Costa and 5.0 in the Bay Area. There were only 35 two- to three-room units in 1980, however, this number has greatly increased due to the construction of condominiums and the Willow Glen apartment complex.

The Census does not indicate how many of these large families actually live in large enough units. There are probably a number of families who cannot afford to rent or buy as much housing as they need. In 1980, 3.7 percent, or 65 units were considered overcrowded with more than 1.01 persons per room. Of these 65 overcrowded units, 15 were considered extremely overcrowded with 1.5 persons per room. Most of the overcrowded units were owner-occupied (92.3%). Additionally, Asian and Pacific Islanders comprised 84.1 percent of overcrowded households, yet represented only 30.7 percent of the total households. Applying this percentage to the current number of households, it can be assumed that 197 units are overcrowded.

No specific data is available on large families' ability to pay housing costs, however, the Moore Iacofano Goltsman survey found that, on average, large households pay 9.3 percent more in housing costs while having the same average income level as smaller households.

Overcrowding

An overcrowded unit is defined as one in which there are more than 1.01 persons per room (including kitchens, bedrooms, living rooms, etc., but not including basements, bathrooms or halls). Given this definition, Hercules had 65 crowded units (2.9 percent) in 1980, 15 of which had over 1.5 persons per room, all but one of these was owner occupied. This was more than the County (2.9 percent), but less than the nine-county Bay Area (4.8 percent). While most of the overcrowded units in Hercules are owner-occupied, in the County and region, the majority were renter-occupied. This has to do mainly with the limited supply of rental housing present in Hercules. In general, the City's housing stock is relatively large (the median number of rooms in 1980 was 5.6, compared to 5.4 in the County and 5.0 in the region).

TABLE 10
Population Breakdown by Persons per Unit

<u>Persons in Unit</u>	<u>Hercules</u>		<u>Contra Costa County</u>		<u>Bay Area</u>	
1-4 persons	1,391	79.0%	215,001	89.0%	1,760,042	89.0%
5 persons	204	12.0%	17,086	7.0%	123,521	6.0%
6 or more persons	<u>158</u>	<u>9.0%</u>	<u>9,447</u>	<u>4.0%</u>	<u>86,986</u>	<u>4.0%</u>
Total	5,936	100.0%	656,380	100.0%	5,179,784	100.0%

Source: U.S. Census, 1980.

In 1980, the majority of overcrowded units were occupied by Asians and Pacific Islanders, as indicated by the overcrowded housing units with complete plumbing fixtures. While these ethnic groups comprised over 30.7 percent of the population, they made up 84 percent of the overcrowded households.

Farmworkers

Agriculture is not a significant part of Hercules' economic base, and almost no one in the work force is a farmer. According to ABAG Projections 1990, only .5 percent of the population is employed in the agriculture industry. As a result, there is no need to provide special housing for farmworkers in Hercules.

Housing Discrimination

The Housing Alliance of Contra Costa County handles housing discrimination problems in the county. They have received five complaints from Hercules residents about housing discrimination in the last three years. Of the five cases, three were discrimination on the basis of race, one was discrimination on the basis of marital status, and one was discrimination against

a family with children. The Housing Alliance has not been very proactive on the discrimination issue over the last few years. Because of this, these statistics may or may not represent the entire discrimination problem in Hercules. However, the staff indicated no additional discrimination complaints had been registered with the City.

V. OTHER HOUSING ISSUES

ABAG Regional Housing Needs Determinations

State legislation enacted in 1980 requires the Association of Bay Area Governments (ABAG) to determine existing and projected Bay Area regional housing needs for persons of all income levels. ABAG also determines each city's share of the regions housing needs. The figures are based on market demand for housing, employment opportunities, land availability, commuting patterns, type and tenure of housing, and the provision of a 4.5 percent housing vacancy rate. The most recent determinations were prepared and published by ABAG in the "Housing Needs Determinations, San Francisco Bay Region", January, 1990.

Governmental Code Section 655584 (c) gives all cities and counties 90 days to review and revise the determinations contained in the ABAG report. The figures included in ABAG's 1990 report was accepted by the Hercules City Council.

Housing element updates, including the development or modification of existing housing programs, are to consider the regional housing needs. As discussed in the section on program achievements, the City of Hercules exceeded ABAG's housing needs determinations in total numbers for the 1980 through 1989 period. However, only Willow Glen has rents that even approach amounts which are affordable to households earning less than the median income. For the 1990 to 1995 period, ABAG's housing needs determinations call for the production of 1,262 units, of which 202 should be affordable to very-low income households and 152 should be affordable to low-income households. An estimated 240 units should be affordable to the City's moderate-income households, with the remaining 668 units for the above-moderate income families.

Housing production levels in Hercules will likely be close to or exceed those required by ABAG's regional needs determinations. In September 1989, there were 1,096 approved units in the City, a considerable number of which were already under construction. Where the City's performance has not kept pace with ABAG allocations is in the production of units for lower-income households. As discussed in the section on goals, policies and objectives, it is recommended that the City initiate several new programs in this five-year cycle in an effort to address the housing needs of all income categories. As part of the housing element update process, the City Council will establish priorities among the objectives and programs included in the draft document.

Housing Costs and Ability to Pay

To analyze a household's ability to pay for housing, housing cost as a percent of household income was evaluated. In general, housing costs are considered affordable if they are no more than 25 percent (state standard) to 30 percent (federal standard) of gross income. In 1980, roughly half the City's households paid more than 25 percent of their incomes toward housing costs, based on information contained in the U.S. Census. However, 92 percent of the owner-

occupants, and all the renters earning under \$20,000 (or approximately 60 percent of the County median) paid over 25 percent of their incomes toward rent. These figures indicate that as in most communities, the majority of lower-income households pay an excess proportion of their income toward rent.

It should be noted that relative to other communities, the City has a relatively small lower-income population. In 1980, four percent of the City's population was considered very-low income and five percent was considered low-income. Based upon the City's household survey results, the current proportion of lower-income households is comparable, with the percentage of very-low income households increasing slightly to five percent, and the low income population remaining at five percent of the total. .

While it is difficult to gauge the extent to which the City's households are currently overpaying for housing, general indicators in the regional and local market suggest that this situation has not improved. As indicated in Table 11, housing prices in the Bay Area over the last decade have increased about eight times as fast as incomes, rising from a median of \$115,227 to \$233,921, or an increase of 103 percent. Average incomes over this same period increased by only 13 percent. While statistics are not available to make this precise comparison for Hercules, rapid increases in the median home prices evidenced in West Contra Costa (61 percent) have also outpaced the average increases in incomes registered in Hercules (13 percent) by a significant margin.

Table 12 presents a summary of the housing costs affordable to the City's households at different income levels. As shown, the City's very-low income households can pay up to approximately \$506 per month for rent, assuming they contribute 30 percent of their income toward housing costs. The City's lower-income households are estimated to be able to afford maximum rental payments between \$506 and \$763 per month, or a house costing less than \$86,900, assuming a 20 percent downpayment. As noted previously, the existing housing prices are out of reach for the very-low income, and only a tenant at the very top of the low-income category could afford to reside in Willow Glen (where rents range from \$710 to \$745). With condominium prices currently starting at about \$100,000, only the City's moderate and above-moderate income households can afford to purchase a new home.

Data from the household survey indicate that the proportion of very-low and low-income households overpaying for housing has declined since 1980. Of the 21 households surveyed with incomes under \$20,000 (roughly comparable to the very-low income category), 67 percent indicated that they are paying less than 30 percent of gross income on housing. Of the low-income households polled (earning between \$20,000 and \$30,000), only 24 percent indicated housing costs of over 30 percent of income. Particularly unusual was the very high proportion of the lower-income households which indicated that they pay nothing for housing costs. A possible explanation for this apparent paradox, is that these households paid all cash for their home. This phenomenon is generally more common for mature householders who move to less costly homes, having previously accumulated substantial equity in larger homes through appreciation. In addition, sales agents indicated that Asian families are more likely to purchase

Table 11
City of Hercules
Home Prices and Household Incomes (1)
1980 - 1988

	1980	1985	1988	% Change 1980-1988
Median Home Price--Bay Area (2)	\$115,227	\$146,451	\$233,921	103%
Mean Household Income--Bay Area (3)	\$39,736	\$43,300	\$45,040	13%
Median Home Price--West Contra Costa	\$81,127	\$100,349	\$130,505	61%
Mean Household Income--Hercules (3)	\$51,280	\$56,400	\$58,118	13%

- (1) Prices are based on Multiple Listing Service (MLS) sales of single family homes, townhomes, and condominiums. MLS data includes many, but not all, residential sales. It does not include sales of many newly constructed homes, particularly high end homes.
- (2) Median home prices based on December MLS sales data from the following boards: Berkeley, Contra Costa, Los Altos-Los Gatos-Saratoga-Mountain View-Sunnyvale, Marin, Palo Alto, San Jose, Southern Alameda, Oakland, and San Francisco.
- (3) Income for 1988 is based on the average yearly increase from 1985 to 1990.

Source: California Association of Realtors; West Contra Costa Board of Realtors; Association of Bay Area Governments; Sedway & Associates, February 1990.
[hhp, eca, 1.8.90]

Table 12
Affordability Analysis
Based on Median Income in Contra Costa County
Hercules, 1990

Income Range(a)	Classification(b)	Household Population Distribution(c)		Max. Affordable Monthly Hsng or Rent Pymt.(d)		Housing Price @ 20 Percent Down Payment(e)
		Number	Percent			
Less than \$20,250	Very Low Income	265	5.00%	-	\$506	- \$57,688
\$20,251 - \$30,500	Lower Income	265	5.00%	\$506 -	\$763	\$57,690 - \$86,888
\$30,501 - \$38,150	Moderate Income	530	10.00%	\$763 -	\$954	\$86,890 - \$108,681
\$38,151 +	Above Moderate Income	4,240	80.00%	\$954 +		\$108,683 +
	Total Households	5,300	100.00%			

Notes:

(a) Income range based on HUD estimates for three person family living in Contra Costa County.

(b) Income classifications based on HUD standards.

Very low income = less than 50% of median; low income = 50% to 80% of the median;

Moderate income = 80% to 120% of the median; and above moderate income = greater than 120% of the median

(c) Household population distribution based on extrapolations from MIG survey 12/89.

Number of households based on ABAG Projections 1990.

(d) The maximum monthly housing payment is calculated as 30% of income.

(e) The maximum house price is based on a 30-year fixed rate mortgage at 10% interest rate with a 20 percent down payment.

Source: Sedway & Associates, December, 1989

(haa, mh)

a home outright, rather than assume the long-term debt typical of most home acquisition transactions.

Even with this potentially unique group of lower-income residents, assuming 33 percent of the City's very-low income households and 24 percent of the low-income households overpay, 87 very-low income households and 64 low-income households would be currently overpaying for housing.

The profile of the City's lower-income households, compiled by Moore, Iacofano Goltsman, is summarized in Table 13. As indicated, of those earning less than \$20,000 (very-low income households), most are homeowners (86 percent) with smaller than average household sizes (2.09 compared to 3.36 Citywide). Consistent with this profile, almost half are retirees (compared with nine percent in the City as a whole), 41 percent are over the age of 65 (compared with only five percent Citywide), and only 14 percent are under the age of 20, compared to 36 percent for the City as a whole. The ethnic composition of the very-low income group also diverges somewhat from the Citywide profile. A larger percentage of the very-low income group are white (64 percent, compared to 46 percent), a lower percentage are Asian (16 percent compared to 38 percent). The percentages of very-low income hispanics and blacks are almost twice the percentages found in the general total City population.

The profile of the City's low-income households (households earning \$20,000 to \$30,000) is quite different. While there is a higher percentage of retirees, the incidence of elderly residents in this category was 13 rather than 48 percent. Further, while the household size of 3.05 is smaller than the Citywide average, it is considerably larger than the very-low income average suggesting that in general, each family with children is larger than average. Finally, of all households surveyed in this group, 52 percent were Asian, 35 percent white, none black, and only four percent Hispanic.

These profiles suggest that there are two groups of households in need of more affordable housing in Hercules: the elderly and families with children. Due to the overall limited size of these populations in need, particularly families, it likely would not be sufficient to warrant the development of any 100 percent below-market rate projects. Instead, it would be more appropriate to sponsor the development of larger, multifamily projects with a percentage of below market-rate units. There may be adequate demand for the development of a predominately below-market seniors apartment project. Due to the fact that the majority of the City's elderly residents currently live in single-family homes, development of an independent senior housing project, and not a development targeted to the more frail elderly is most appropriate.

Table 13

Profile of Low Income Households

<i>Household Characteristics</i>	<i>Households with Annual Incomes Under \$20K</i>	<i>Households with Annual Incomes \$20 - 30K</i>	<i>Low Income Households (Under \$31K)</i>	<i>All Households*</i>
% of Sample*	5.4%	5.4%	11%	100%
Household Size	2.09	3.05	2.57	3.36
Tenure	86% own 14% rent	86% own 14% rent	86% own 14% rent	92% own 8% rent
Full-Time Wage Earners**	.38/hh 24%	.91/hh 62%	.64/hh 43%	1.60/hh 89%
Part-Time Wage Earners**	.10/hh 5%	.10/hh 10%	.10/hh 7%	.23/hh 18%
Retirees	48%	38%	43%	9%
Age	12% 0 - 16 2% 16 - 20 39% 21 - 40 7% 41 - 65 41% 65+	27% 0 - 16 6% 16 - 20 24% 21 - 40 29% 41 - 65 13% 65+	21% 0 - 16 5% 16 - 20 30% 21 - 40 19% 41 - 65 25% 65+	28% 0 - 16 8% 16 - 20 33% 21 - 40 26% 41 - 65 5% 65+
Ethnicity	64% White 2% Filipino 0% Other Asian 14% Chinese 11% Black 9% Hispanic	35% White 38% Filipino 5% Other Asian 9% Chinese 0% Black 4% Hispanic	47% White 22% Filipino 3% Other Asian 11% Chinese 5% Black 8% Hispanic	46% White 17% Filipino 14% Other Asian 7% Chinese 6% Black 5% Hispanic
Education Level	0% Elem Sch 21% High Sch 12% HS Grad 33% College 24% * Grad 9% Grad Sch 0% Prof Sch	7% Elem Sch 27% High Sch 20% HS Grad 17% College 22% * Grad 4% Grad Sch 2% Prof Sch	4% Elem Sch 23% High Sch 21% HS Grad 24% College 22% * Grad 6% Grad Sch 1% Prof Sch	1% Elem Sch 9% High Sch 18% HS Grad 28% College 32% * Grad 8% Grad Sch 4% Prof Sch

* Total households responding to Question 19: 386 (86% of total survey sample of 450).

** The top number indicates the average number of wage earners per household in the sub-sample; the bottom number refers to the percentage of these households indicating at least 1 wage earner in the specific category (full-time or part-time).

Energy Conservation Opportunities

Recent legislative actions in California are increasingly calling upon cities to play a crucial role in promoting energy conservation and solar energy in residential development. Revisions to State energy efficiency standards for new homes require rigorous compliance with a set of energy conservation standards. These are in the California Energy Commission's Title 24 standards, enforceable by local building departments. The Solar Rights Act of 1978 requires that local governments review tentative maps for use of natural heating and cooling (or passive) opportunities in new subdivisions. The State Office of the Attorney General has concluded that failure to meet the design standards could be grounds for disapproval of a tentative map by the local government.

The age of a housing unit is a rough indicator of its energy efficiency. As noted previously, the great majority of housing in Hercules was constructed since 1980. As such, the City's housing stock generally incorporates energy saving devices and construction techniques.

VI. STATUS AND EVALUATION OF EXISTING PROGRAMS

In compliance with State law, this section summarizes the City's achievements in satisfying its housing needs. The 1984 housing element described six housing goals addressing the issues of: expanding the supply of a range of housing types to accommodate the region's population; maintaining and improving the quality of the existing stock as well as the quality of existing and new neighborhoods; promoting energy conservation; promoting equal housing opportunity; and citizen participation in implementing the housing element. To accomplish these tasks, the City identified 18 policies and 40 actions. Following is a summary of the City's achievements as they relate to specific Actions from the 1984 element.

PRODUCTION

Overall production goals as established by ABAG identified the need for 3,145 new residential units to be developed between 1980 and 1990 (1984 housing element, pg. IV-24). During the first nine years of the decade 3,554 new units have been added to Hercules, exceeding the regional share of housing production need.

During this same period, the City had delineated a policy of expanding the available housing types. Toward that end, the proportion of multifamily homes increased from a nominal percentage of the housing stock to forty percent of the units added in the last five years. Further, the first rental housing project was constructed (Actions 1.a, 1.b, 1.c, 1.d, 3.a, 3.b, 3.c, 4.g, 2.h).

The City has not provided its fair share of affordable housing. Over the ten-year period, ABAG estimated that 48 percent of the units, or 924 units should be affordable to very-low and low-income households. The new 84-unit apartment project is theoretically affordable to the City's low-income households, while no units were developed that meet the housing needs of the very low income (Actions 1.e - 1.i, 2.d, 4.h).

AFFORDABLE HOMEOWNERSHIP PROGRAMS

During the previous five-year period, two programs increased the affordability of homeownership for the City's moderate-income households. First, the City has participated in the home mortgage revenue bond programs sponsored by Contra Costa County (Action 1.c). During the last five years, 178 purchasers benefitted from a lower interest mortgage. In addition, in 1985 the City established the Homeownership Opportunity Program (HOP) (Action 1.g). This program, administered through the Redevelopment Agency, utilizes the City's 20 percent tax increment set aside to provide deferred second mortgages to qualifying moderate-income households. Under the HOP program, a silent second mortgage up to 15 percent of the purchase price would be contributed by the City. No mortgage payments are due under the program guidelines until the home is sold or refinanced. Ten HOP loans were executed during the period. However, due to the purchase price maximum of \$110,000, few homebuyers have been able to

find a qualifying unit in the recent past, and no HOP loan has been issued for the past 15 months. Also, implementing this program consumes substantial staff resources. If this program is continued, it is recommended that the City examine the program parameters to increase demand for the program. In particular, it is suggested that the maximum home price be increased.

As discussed more fully in the following section, the City has not adequately addressed the housing needs of its very-low and low-income residents. As outlined in the revised program section of this document, the City is attempting to address this deficit by revising and expanding its housing goals and established several new housing programs.

Other City actions identified in the previous element include maintaining the existing stock (Actions 2.a - 2.h). Limited publicly-sponsored activities were undertaken to promote housing conservation, however as noted previously, the City's stock is relatively new and a windshield survey identified little housing deterioration. In terms of neighborhood maintenance, several approaches to approving compatible building design are promoted by the City, including Planned Unit Developments and ongoing maintenance of public improvements (Actions 3.a -3.f).

Energy conservation standards are promoted through the enforcement of California residential energy conservation standards and permitting solar design and other energy conserving construction techniques (Actions 4.a - 4.i).

Equal opportunity programs involve supporting the Housing Alliance of Contra Costa County and other local organizations providing counseling and handling housing discrimination complaints (Actions 5.a - 5.c). This program is continued in the element update.

The previous element identified involving the citizens of Hercules in the housing element programs and update process (6.a - 6.b). This action has been satisfied, as evidenced by the current update process, which included a series of public hearings and workshops to spell out newly-considered housing programs, a mailing to community organizations and homeowners groups inviting public comment, and widely-advertised hearings.

VII. CONSTRAINTS TO DEVELOPMENT

Governmental Constraints

The State's "Summary of the standards used in the review of local housing elements" says the "purpose of a constraints analysis is to identify those governmental and nongovernmental factors unique to the community that inhibit the development, maintenance, or improvement of housing." Following is a brief discussion of the factors that may impede the development of housing in Hercules.

Land Use Controls

The City of Hercules has three multifamily zoning categories which allow for between ten and 30 units per acre. The City's municipal code has a per unit open space requirement for each of these categories. In the R-2 District, 1,500 square feet of open space must be provided per unit. In the R-3 and R-4 Districts, a minimum of 300 square feet of open space must be provided per unit. While these requirements may result in a more aesthetically pleasing design and provide an open space amenity for the project residents, such a requirement may increase the cost of development, which is generally translated into higher costs to the consumer.

A second land use constraint relates to the minimum lot sizes mandated for multifamily projects. Under Section 10.1.405 of the Municipal Code it states that development in the R-2 District requires a minimum of five acres, resulting in a minimum project size of 50 units. In the R-3 and R-4 District, the minimum lot size is three acres: providing for a minimum 51-unit project in the R-3 District and a 90-unit project in the R-4 District. To the extent that there are other, smaller sites suitable for multifamily housing, higher-density projects are forfeited. This constraint has been addressed in the recommended creation of two new zoning and general plan classifications, one which allows for a mixed residential/commercial District, and the other which creates a higher-density zoning classification.

Other land use controls are typical of surrounding communities and do not represent unique development constraints.

Development Fees and Dedications

Like most communities, the City of Hercules charges significant fees in order to pay the costs of infrastructure and services necessary for growth. Currently, fees are negotiated through a development agreement. As an example, a typical four bedroom single-family home which has an average construction cost of \$82.50 per square foot to build would be assessed about \$6,067 in processing fees, and about \$7,153 in one-time impact fees and utility charges, including: a

\$940 traffic impact fee, a \$1,608 school impact fee, a \$1,500 growth management fee, and a \$410 growth impact fee, for a total of \$13,220 in typical fees per unit as of February, 1990. Fees for development of an eight-unit multifamily project are estimated at \$44,358, or \$5,548 per unit. (A summary of the planning and development fees is included in Appendix A.)

Infrastructure and Utilities

Discussions with the City's utility districts indicates that there is adequate capacity to accommodate the growth forecast over the next five-year period, particularly in the incorporated areas of the City. Pacific Gas & Electric (PG&E) indicated that all parts of the incorporated City have access to gas and electricity, but unincorporated areas of the City have no gas service.

Extending utilities and services to the unincorporated Franklin Canyon area is likely to add substantially to the cost of housing there. The primary utility cost will involve extending the water main almost one-quarter mile to provide domestic water and water for firefighting, and extending the sewer line. A supplemental EIR is currently being prepared and will further document these costs.

Additionally, the developer of Franklin Canyon will be required to pay for the construction of an 11-person fire station at an estimated cost of \$1 million.³ The cost of two pieces of equipment, estimated at about \$300,000, may also be borne by the developer. The up-front capital outlay is not expected to dissuade developers in ultimately building out the Franklin Golf Course area, but will likely result in a residential product that is not affordable to the low- and very-low-income residents.

Finally, the Franklin Canyon developer will be responsible for providing the up-front monies needed to extend gas service to the area. The majority of this funding will be reimbursed by PG&E.

Water service is provided to the City by East Bay Municipal Utilities District (East Bay MUD). Discussions with the facilities planner for the District indicated that there is ample capacity to handle the growth projected for the City. Extending services to the Franklin Canyon area may require upgrading or replacing the existing pipeline and main. This would result in some additional expense to the developer. Water mains are estimated to cost approximately \$25 to \$30 per linear foot to install.

While there is currently adequate sewer capacity, projected development over the next five years would likely consume most of the remaining capacity. At present, the District is operating at 85 percent of capacity, and treats 1.4 million gallons of sewage per day. Extending service to Franklin Canyon will be costly to the developer, and require new treatment capacity.

³Based on discussions with Mr. Pedro Jimenez, Fire Chief, Rodeo/Hercules Fire District.

To accommodate long-term growth, two expansion plans are being investigated, with costs for one approach estimated at \$15 million, and a less costly upgrade plan estimated at six to ten million dollars. The District hopes to resolve the issue by summer. Various funding methods are under consideration to finance the plant expansion including an assessment district and a new tax system.

Limited Funding For State and Federal Affordable Housing Programs

Throughout the Bay Area, and nation generally, a significant constraint to providing affordable housing has been the declining amount of federal funds available for housing. Popular programs which had long supplemented local initiatives have all but dried up. Nonetheless, there are some remaining programs or subsidies which could contribute to the supply of affordable housing in Hercules. These include the Section 8 rental subsidy program, HUD Section 202 Senior and Handicapped Housing program and others. The City of Hercules does not currently participate in nor solicit funding from these sources. As indicated in the program section of this document, it is recommended that the City reaffiliate with the Contra Costa County Housing Authority, in an effort to take advantage of appropriate programs, as funding permits. The majority of the County's smaller cities do not establish their own Housing Authorities, but rather work through the County.

Nongovernmental Constraints

Ordinary nongovernmental constraints to the development of housing such as financing costs, speculation, and labor costs are not specific to Hercules and are not addressed herein. Further, on average, housing costs are more affordable than many of the surrounding communities in the Bay Area. The following constraints represent those most unique to Hercules:

Limited Employment Opportunities

The City of Hercules currently faces a substantial jobs/housing imbalance. That is, the majority of employed residents work outside the City. The extent of out-commuting impacts local street networks and, particularly, Interstate 80. However, as noted earlier, the City serves an important regional role in housing residents that are employed in San Francisco and Oakland where housing is generally more expensive. Additionally, the City has an extensive inventory of vacant, commercially zoned land. One of the primary goals of the City is to promote balanced commercial development, both to contribute to the local employment base generally, as well as to generate additional public revenues to maintain the quality of public services.

Land Availability and Home Costs

Until recently, Hercules had an ample supply of relatively affordable land for housing compared to much of the inner Bay Area. However, new home prices in Hercules have been escalating due to two factors. First, since home prices throughout the Bay Area are at all-time highs, more and more moderate-income purchasers are being pushed further from the inner Bay Area to outer

Bay Area communities such as Hercules. Second, the largest inventory of remaining vacant land in Hercules is in the Franklin Canyon area which is projected to be very costly to develop. In the future, these factors of strong demand and limited land availability will likely be reflected in additional price increases.

Important components of housing costs include land, construction and financing. Discussion with new residential developers indicates the typical construction cost is about \$65 to \$70 per square foot, resulting in an average cost of more than \$63,000 in hard costs alone for the construction of a prototypical 900 square foot apartment or condominium. Assuming thirty percent in soft costs and about \$50,000 in improved land costs results in a unit valued at a minimum of \$132,000. Debt service on this amount alone would require payment of more than \$926 per month at 10 percent interest and 20 percent down. Higher interest rates would further exacerbate the affordability problem. Comparing these figures to Hercules' current income profile, the average household in the area would not be able to afford a new apartment or condominium. Thus, the only hope to encourage greater affordability is to offer local incentives or to directly participate in providing housing through a contribution of land or other resources. The City is currently considering several programs which will enhance the affordability of new housing, including the possibility of donating a portion of City-owned land for an affordable senior housing project.

Rental Units

The 1986 Federal tax law changes have eliminated many of the tax advantages associated with developing rental housing. The result has been that few market rate apartments have been built in the Bay Area, especially outside of the more urbanized areas where higher densities can assist in offsetting high land costs. In tandem with the overall dampening of the rental housing market, rapidly increasing land prices make all but luxury or assisted projects economically difficult. While this situation is not unique to Hercules, the City has a dearth of rental units. Several new programs are aimed at increasing the supply of rental, including adopting a secondary unit ordinance, and creating a higher-density zoning District.

VIII. HOUSING GOALS, POLICIES AND PROGRAMS

The following housing goals, policies and programs have been adopted to meet the City's regional housing needs, and they are consistent with the City's overall agenda. These goals, policies and programs promote the development of a balanced, well-integrated community which satisfies its residential and employment needs.

PROGRAM PRIORITIES

Because the supply of vacant land is rapidly diminishing in Hercules, the task of meeting housing needs is becoming more challenging. Further, the City has many pressing needs, only some of which pertain to housing. In recognition of the City's broad agenda and limited land, staff and budget resources, programs have been prioritized for each housing goal and policy. Programs are listed below with their respective priority designations, "priority" or "not having priority". Each "priority" program will be proactively implemented by the City during the five-year planning period this housing element is effective. Each program designated as "not having priority" is endorsed by the City, but, due to the City's limited resources, will only be implemented during the five-year planning period if a party approaches the City with a viable, reasonable concept that incorporates a nonpriority program.

GOAL 1: HOUSING PRODUCTION AND AFFORDABILITY

GOAL: Provide a sufficient number of affordable housing units to meet the needs of current Hercules residents and provide a fair share of the market area housing needs, as outlined by the Association of Bay Governments.

Policies: 1.1 On a City-wide basis, increase the number of housing units for persons within the various household income levels to meet the need for additional housing during the 1990-1995 period. This objective is to add the following number and percent of housing units during the five-year period:

	<u>Very low Income</u>	<u>Low Income</u>	<u>Moderate Income</u>	<u>Above Moderate Income</u>	<u>TOTAL</u>
# of Units	202	151	240	669	1,262
Percent	16%	12%	19%	53%	100%

1.2 New housing development should include a variety of home designs, at various densities and price levels, both lower and higher than presently available.

- 1.3 Seek all available resources, including tax-increment revenues, in-lieu fees, and State and Federal monies, to help meet its objectives for the provision of housing at the various income levels outlined above.
- 1.4 Actively support and work with non-profit housing development corporations and other housing providers to promote development of affordable housing.
- 1.5 Use redevelopment tax increment funds for housing in cooperative ventures with the private sector to preserve and increase the supply of affordable housing.
- 1.6 Preserve affordability for a minimum of 15 years for projects developed with City assistance, and for a longer period for the one City-owned site.

Programs/Actions:

Priority:

- 1.a *Program Name:* (R-5) Multifamily Housing District
Description of Program/Action: Amend the zoning ordinance and general plan to allow additional units aimed at increasing the supply of privately produced rental housing. R-5 District to allow 3-story buildings with up to 50 units/acre. Target development of affordable housing to these sites.

Responsible Agency: Planning Department

Five-Year Objective: Adopt new designations, annually monitor the vacant/undeveloped land.

- 1.b *Name of Program:* Mixed-Use Residential/Commercial District (CR)

Description of Program/Action: Expand the potential for housing by permitting residential development in commercial areas as a mixed use and as a separate use when the design and location are appropriate.

Responsible Agency: Planning Department

Five-Year Planning Period: Create mixed use zoning district and general plan designations. Compile inventory of appropriate sites

and re-zone accordingly.

1.c *Program Name:* Mortgage Revenue Bond Financing

Description of Program/Action: Use of mortgage revenue bonds to support the development of multifamily and single-family housing for Low- and Moderate-Income households.

Responsible Agency: Planning Department

Five-Year Objective: Assist development community in pursuing bond financing through Contra Costa County for eligible multifamily projects and continue to participate in single-family bond program. Provide loans for 50 units per year, pending funding and demand.

1.d *Program Name:* Section 8 Rental Assistance

Description of Program/Action: Federal Subsidy for Low-Income Families

Responsible Agency: Redevelopment Agency, Contra Costa County Housing Authority

Five-Year Objective: Enter into a cooperative agreement with the Contra Costa Housing Authority so that they may issue Section 8 vouchers in Hercules.

1.e *Name of Program:* Inclusionary Housing Requirement

Description of Program/Action: Residential projects of 10 or more units shall be required to provide at least 10 percent of their units at levels affordable to low- or moderate-income households. The City's primary intent is the construction of units on-site. If this is not practical, the City will allow other alternatives of equal value, such as in-lieu fees, construction of units off-site, etc.

Responsible Agency: Planning Department

Five-Year Objective: Adopt and implement policy.

1.f *Name of Program:* In-Lieu Fees

Description of Program/Action: In-lieu fees to be contributed to

affordable housing fund. In-lieu fee to be based on difference between market rate units, and housing deemed affordable to moderate-income household.

Responsible Agency: Planning Department

Five-Year Objective: Adopt and implement ordinance.

Not Having Priority:

1.g *Program Name:* Housing Opportunities Program

Description of Program/Action: Use of Redevelopment set-aside for deferred second mortgage of up to 15 percent of purchase price, combined with mortgage credit-certificates (MCC's) for eligible first-time homebuyers. Targeted to moderate- and middle-income purchasers.

Responsible Agency: Redevelopment Agency

Five-Year Objective: Modify program parameters to allow home price of up to \$145,000. Develop active outreach program to advertise program availability. Issue five loans a year.

1.h *Program Name:* Density Bonus Program

Description of Program/Action: Provide 25 percent density bonus up to maximum general plan designation, in exchange for 25 percent or more low income housing. Actively seek developers to use Section 8 certificates in rental housing constructed in this way.

Responsible Agency: Planning Department

Five-Year Objective: 25 affordable units by 1995.

1.i *Name of Program:* Fast Track Processing

Description of Program/Action: Encourage the development of affordable housing units by establishing procedures for the waiver of fees and the relaxation of development standards in return for commitments to provide lower-income housing. Can be combined with density bonus program.

Responsible Agency: Planning Department

Five-Year Objective: 25-50 affordable units

1.j. *Name of Program:* Developer Outreach

Description of Program/Action: Encourage the development of housing affordable to very-low, low- and moderate-income households by enlisting the cooperation of private developers in utilizing the programs of the housing element. Provide interested developers with inventory of sites for higher density housing, including site characteristics and development potential.

Responsible Agency: Planning, Building Departments

Five-Year Objective: Ongoing

GOAL 2: HOUSING CHOICE

GOAL: Provide a selection of housing by type, tenure and price.

- Policies:**
- 2.1 Provide well-designed, well-built housing units for low- and moderate-income households in mixed-density developments, including Planned Unit Development (PUD), avoiding a concentration in any limited area.
 - 2.2 Expand the number of rental units for those who cannot afford to purchase or who choose to rent.
 - 2.3 Permit secondary housing units in all single-family residential areas, where their design and site features are compatible with surrounding areas.
 - 2.4 In accordance with state legislation, manufactured housing and mobile homes, built according to current federal standards, should be permitted on permanent foundations in residential neighborhoods, providing their exterior design is compatible with the surrounding homes.

Programs/Actions:

Priority:

- 2.a *Program Name:* Insure Housing Variety

Description of Program/Action: Review development proposals and permit statistics to encourage the development of diverse housing types.

Responsible Agency: Planning Department

Five-Year Objective: Ongoing

2.b *Name of Program:* Permanent Mobile and Manufactured Homes

Description of Program/Action: In accordance with state law, revise zoning ordinances to allow placement of manufactured and mobile homes, built according with Federal standards, on permanent foundations in all residential areas with provisions for preserving neighborhood design and site standards.

Responsible Agency: Planning Department

Five-Year Objective: Adopt ordinance.

2.c *Program Name:* Self-Help Ownership Opportunities

Description of Program/Action: Investigate the feasibility of self-help housing and limited-equity cooperatives, to expand housing for low- and moderate-income households; provide information to interested citizens. Develop list of non-profit organizations that initiate, provide technical assistance, and support self-help housing.

Responsible Agency: Planning Department

Five-Year Objective: Develop and circulate list of technical assistance providers.

Not Having Priority:

2.d *Program Name:* Second Unit Ordinance

Description of Program/Action: Adopt a secondary unit ordinance to allow new units to be added on single-family developed parcels, with provision for preserving neighborhood design and site standards.

Responsible Agency: Planning Department

Five-Year Objective: Develop program parameters and adopt ordinance. Approve five secondary units.

GOAL 3: SPECIAL NEEDS

GOAL: Provide a sufficient number of housing units to meet the special needs of senior citizens, physically disabled, homeless, large families, and female-headed households.

- Policies:
- 3.1 Encourage accessible units in all projects.
 - 3.2 Encourage provision of senior housing by considering density bonuses up to general plan maximum where senior projects are desirable and compatible with special senior needs. Such projects shall only be allowed where the size of the structure and style of architecture are compatible with the surrounding neighborhood.
 - 3.3 Encourage provision of low-income housing units, especially for single persons, single parents, elderly and young families.
 - 3.4 Assist the County and social service groups to serve the City's homeless population.

Programs/Actions:

Priority:

3.a *Program Name:* City-Sponsored Housing for the Elderly

Description of Program/Action: Promote the development of a low- and moderate-income senior apartment project on a City-owned site; consider assisting the developer by writing down the cost of the land.

Responsible Agency: City Council, City Manager, Planning Department

Five-Year Objective: Identify site, establish project parameters, solicit developer and develop 100-unit project.

3.b *Program Name:* State and Federal Assistance

Description of Program/Action: Utilize State and Federal assistance to the fullest extent possible to develop affordable lower-income housing for the elderly and disabled including CDBG funds for land write down.

Responsible Agency: Planning Department, Redevelopment Agency

Five-Year Objective: Reaffiliate with County to obtain funding. Ongoing.

3.c *Name of Program:* Barrier-Free Subdivisions

Description of Program/Action: Sidewalks on all new subdivisions required to have ramps.

Responsible Agency: Public Works Department

Five-Year Objective: Ongoing

3.d *Name of Program:* Female-Headed Household Assistance

Description of Program/Action: Provision of day-care facilities at elementary schools.

Responsible Agency: Community Services Department

Five-Year Objective: Ongoing

Not Having Priority:

3.e *Name of Program:* Shared Housing Referral Program

Description of Program/Action: Match seniors, empty-nesters, or disabled with persons to share housing costs. Also provide roommate referrals for women with children and persons in need of temporary shelter.

Responsible Agency: Planning Department

Five-Year Objective: Within planning period, establish program. As funding is available, hire coordinator.

3.f *Program Name:* Assistance for the Homeless

Description of Action/Program: Support region-wide programs and emergency shelters and transitional facilities for the homeless.

Responsible Agency: City Manager's Office/Redevelopment Agency

Five-Year Period: Investigate developing a countywide approach to address the homeless, which could include some funding for existing or new facilities and distributing a referral list to local community groups and religious organizations.

3.g *Name of Program:* Density Bonus for Senior Housing

Description of Program/Action: Provide a 25 percent density bonus for development of a senior housing project with at least 25 percent affordable units.

Responsible Agency: Planning Department

Five-Year Objective: Encourage private-sponsored senior project on suitable sites, or initiate city-sponsored project.

GOAL 4: HOUSING CONSERVATION

GOAL: Maintain and improve the quality of the existing housing stock, to assure its continued liveability and safety.

- Policies:**
- 4.1 Minimize the deterioration of the existing housing stock and the need for future rehabilitation or replacement by ensuring that at least the current level of quality is maintained, both for owner-occupied and rental units.
 - 4.2 Restore and maintain residential structures of architectural or historic significance.

Programs/Actions:

Priority:

4.a *Program Name:* Enforcement of Municipal Codes

Description of Program/Action: Enforce municipal codes (housing, health and safety, building) in both new construction and rehabilitation projects.

Responsible Agency: Planning and Building Departments

Five-Year Objective: Ongoing

4.b *Program Name:* Historic Building Code

Description of Program/Action: Building officials can use this more lenient code to facilitate rehabilitation or maintenance of historic buildings.

Responsible Agency: Building Division

Five-Year Objective: Ongoing

Not Having Priority:

4.c *Program Name:* Residential Rehab Loans

Description of Program/Action: Explore use of mortgage revenue sources for low-interest loans for rehabilitation of low- and moderate-income rental and owner-occupied housing.

Responsible Agency: Redevelopment Agency

Five-Year Objective: Investigate feasibility of cooperation with County to obtain financing, if needed.

4.d *Program Name:* Support Neighborhood Groups

Description of Program/Action: Support the creation and maintenance of neighborhood and homeowners groups that will foster pride and promote improvement of homes and neighborhoods; provide information and assistance, where appropriate, on home-repair and maintenance.

Responsible Agency: Planning Department, Redevelopment Agency.

Five-Year Objective: Ongoing.

GOAL 5: NEIGHBORHOOD CONSERVATION

GOAL: Maintain the quality of existing neighborhoods and encourage the development of attractive, viable new neighborhoods.

- Policies:**
- 5.1 Where appropriate, encourage residential uses in commercial areas, and limited commercial uses in residential areas to promote access to services.
 - 5.2 Design new residential areas to avoid conflict with major streets or thoroughfares, to have access to transit facilities, and to encourage safe and convenient alternatives to the private auto.
 - 5.3 Provide and maintain municipal services and facilities at adequate levels in all residential neighborhoods, to meet current standards.

Programs/Actions:

Priority:

5.a *Program Name:* Public Transportation

Description of Program/Action: Encourage developers of new residential areas to work with transit agencies in the design and location of bus stops, turnouts, pavement materials and the timing of development in relation to transit service needs.

Responsible Agency: Planning Department

Five-Year Objective: Ongoing

5.b *Program Name:* Internal Circulation System

Description of Program/Action: To promote safe and well-designed neighborhoods, encourage new residential development to have an internal circulation system, including pedestrian walkways, bikeways, and access to transit facilities.

Responsible Agency: Planning Department.

Five-Year Objective: Ongoing

Not Having Priority:

5.c *Program Name:* Citizen Participation

Description of Program/Action: Involve neighborhood groups in decisions on developments and major improvements. Support creation and maintenance of neighborhood and homeowner groups to foster pride and promote improvement.

Responsible Agency: Planning Department

Five-Year Objective: Ongoing

5.d *Program Name:* Infrastructure Improvements

Description of Program/Action: Regularly assess the condition of capital improvements in all residential areas; schedule maintenance and repairs as needed.

Responsible Agency: Public Works

Five-Year Objective: Ongoing

GOAL 6: ENERGY CONSERVATION

GOAL: Promote energy conservation in new and existing residential units and neighborhoods with energy efficient design and placement of new housing as a priority.

- Policies:**
- 6.1 Require timely and full compliance by the building industry with the California residential energy conservation standards and with the Solar Rights Act.
 - 6.2 Encourage the use of solar systems, both active and passive designs, in new residential development.
 - 6.3 Promote efficient patterns of development, such as clustering townhouses, duplexes, multifamily construction, and mixed uses.
 - 6.4 Encourage the retrofitting of existing homes with energy conservation measures and solar systems where feasible and cost-effective.

Programs/Actions:

Not Having Priority:

6.a *Program Name:* Education Program

Description of Program/Action: List energy conservation techniques, explain available tax credits, identify other financial incentives.

Responsible Agency: Planning and Building Departments

Five-Year Objective: Ongoing

6.b *Program Name:* Solar Access Ordinance

Description of Program/Action: Ensure the provision of sun rights to homeowners with passive and active solar systems.

Responsible Agency: Planning Department

Five-Year Objective: Consider the adoption of this plan.

6.c *Program Name:* Solar Rights of 1978 Act (Sec. 65850.5 and Sec. 17959.1)

Description of Program/Action: Modify local codes and ordinances to eliminate barriers to the use of solar systems in new developments, as required by the Solar Rights Act. (i.e., local zoning requirements, such as setbacks, lot acreage, height limits.)

Responsible Agency: Planning Department

Five-Year Objective: Consider modifying local codes by 1992.

6.d *Program Name:* Pool Heating Ordinance

Description of Program/Action: This ordinance would prohibit the use of fossil fuels for pools in new developments.

Responsible Agency: Building Department

Five-Year Objective: Consider adoption of ordinance.

6.e *Program Name:* Energy Conservation for New Subdivisions

Description of Program/Action: Zoning ordinance encourages efficient street layout, bike and pedestrian paths.

Responsible Agency: Planning Department

Five-Year Objective: Ongoing

GOAL 7: EQUAL OPPORTUNITY

GOAL: Promote equal housing opportunity and access for all persons and families regardless of age, race, ethnicity, religion, sex, family composition, or disability.

- Policies:**
- 7.1 Eliminate discrimination in housing which is based on arbitrary and illegal criteria such as race, age, ethnicity, religion, sex, income, family composition, or disability.
 - 7.2 Establish a means to facilitate resolutions of problems and conflicts which may occur in tenant-landlord disputes.

Programs/Actions:

Priority:

7.a Program Name: Equal Opportunity Education Program

Description of Program/Action: Publicize the City's non-discrimination policies among realtors, builders and the community at large.

Responsible Agency: Planning Department

Five-Year Objective: Ongoing

7.b Program Name: Anti-Discrimination Program

Description of Program/Action: Cooperate with and support the Housing Alliance of Contra Costa County and other locally-based organizations providing information, counselling and referral services and handling complaints of discrimination in housing.

Responsible Agency: Planning Department and the Housing Alliance of Contra Costa County.

Five-Year Objective: Ongoing

Not Having Priority:

7.c *Program Name:* Tenant-Landlord Dispute Resolution

Description of Program/Action: Support the Housing Alliance of Contra Costa County as an information and referral service to assist tenants and landlords in resolving disputes.

Responsible Agency: Planning Department

Five-Year Objective: Ongoing

GOAL 8: HOUSING ELEMENT

GOAL: Ensure citizen understanding of Hercules' housing needs and program options, and promote broad participation in the implementation of the housing element.

- Policies:
- 8.1 Encourage public input to the review and update of Hercules' housing element.
 - 8.2 Provide information on the City's housing needs and programs for meeting those needs to interested organizations and individuals.

Programs/Actions:

Not Having Priority:

8.a *Program Name:* Citizen Participation in Housing Policies

Description of Program/Action: Hold public meetings to receive public input, and to inform residents and those doing business with the City regarding housing needs, resources and program options.

Responsible Agency: Planning Department

Five-Year Objective:: Ongoing

8.b *Program Name:* Housing Element Information for Interested Parties

Description of Program/Action: Consolidate Housing Element policies, relevant codes, and housing needs to guide implementation, to inform those doing business with the City, and to inform the general public.

Responsible Agency: Planning Department

Five-Year Objective:: Ongoing

8.c *Program Name:* Housing Element Statistics

Description of Program/Action: Maintain statistics per the objectives and programs of the Housing Element.

Responsible Agency: Planning Department

Five-Year Objective: Ongoing

8.d *Program Name:* Housing Program Coordinator

Description of Program/Action: Designated staffperson responsible for producing and carrying out the programs of the housing element including proactive involvement in development of affordable housing.

Responsible Agency: Planning Department

Five Year Objective: Hire staffperson

APPENDIX A
SUMMARY OF PLANNING AND DEVELOPMENT FEES
BASED ON EXISTING DEVELOPMENT AGREEMENTS

FEE	TYPICAL SINGLE FAMILY HOME (a)	TYPICAL MULTI- FAMILY BUILDING (b)	COMMENTS
I. PROCESSING FEE			
A. Planning Department			
1. Tentative Map Filing Fee (c)	\$300	\$440	Additional cost of \$20 per unit
2. Final Map Filing Fee (c)	\$300	\$405	Additional cost of \$15 per unit
3. Design Review (Estate Lots) (d)	NA	NA	\$400 for estate lots; otherwise cost incurred
4. Fire Protection Impact Fee	\$510	\$1,360	\$.17 per square foot
B. Engineering Department			
1. Plan Check Fee (e)	\$275	\$275	5.5% of infrastructure construction cost
2. Grading (e)	\$275	\$275	5.5% of grading cost
3. Sewer Connection	\$1,700	\$1,700	
C. Building Department			
1. Filing Fee	\$20	\$20	
2. Building Permit	\$1,153	\$2,514	
3. Plan Check Fee	\$865	\$1,885	75% of building permit fee
4. Plumbing Permit Fee	\$231	\$503	20% of building permit fee
5. Electrical Permit Fee	\$206	\$377	15% of building permit fee
6. Mechanical Permit Fee	\$136	\$251	10% of building permit fee
7. Insulation Permit Fee	\$86	\$189	7.5% of building permit fee
D. East Bay Municipal Water District			
1. Filing Fee	\$10	\$10	
II. IMPACT FEES/UTILITY FEES			
A. Planning Department			
1. School Impact Fee	\$1,608	\$4,288	\$536 per bedroom after first
2. Traffic Mitigation Fee (f)	\$940	\$7,520	
3. Growth Impact Fee	\$410	\$3,281	
4. Community Development Tax	\$1,500	\$12,000	
B. East Bay Municipal Water District			
1. System Capacity Charge (based on 5/8 in. & 1 in. meter)	\$1,135	\$5,480	Multifamily: \$685 per unit for the first ten units and \$545 per each additional unit
3. Installation on Existing Main	\$1,560	\$1,585	2 in. meter installation cost is \$2,290
TOTAL	\$13,220	\$44,358	

-
- (a) Based on an average 4 bedroom 2.5 bath 3,000 square foot single family detached home with an assumed construction cost of \$82.26 per square foot. Does not include Design Review.
- (b) Based on an average 8-unit multifamily building with an assumed construction cost of \$82.26 per square foot, and 1,000 square feet per unit. Does not include Design Review.
- (c) Fees are per lot, or per unit where one or more lots have more than one unit per lot.
- (d) Design Fee for subdivision and multi-family projects not included.
- (e) \$5,000 for the infrastructure cost and \$5,000 for the grading cost are based on an estimation from the engineering department.
- (f) Represents average fee. Actual fee varies with the Development Agreement for each subdivision.

Source: Hercules Planning Department; East Bay Municipal Water District; Sedway & Associates.
[fees2.sam.2/22/90] Date Printed: 07/16/90

APPENDIX B

GLOSSARY OF TERMS

"Accessible Housing": Units that are accessible and adaptable to the needs of the physically disabled.

"Affordable Housing": The generally accepted measure of affordable housing means spending no more than 25-33 percent of one's gross income on housing costs. For example, a beginning school teacher earning \$20,000 per year can afford to pay up to \$550 per month for housing. A beginning policeman or fire fighter earning \$26,000 per year can afford up to \$715 per month.

"Affordable Units": All dwelling units made available at prices or rents below market rate. Affordable units include units affordable to households with very low-income, low-income, and moderate-income.

"Employed Resident": A worker who lives in a given location but could work anywhere.

"Employee": Someone who works at a given location. Workers with routes (travelling salespersons, etc.) are considered employees at the place where they are dispatched from.

"Family": A group of people related by blood or marriage. Not to be confused with "household."

"Household": One or more persons who share a dwelling unit. Not to be confused with "family."

"Housing Need": A local share of the regional housing units assumed by the Association of Bay Area Governments (ABAG) to be "needed." Housing need is distinguished from housing demand, which is sensitive to the marketplace. Housing projections represent probable (rather than desired) levels of housing activity in each jurisdiction of the Bay Area.

"Housing Unit": The official nomenclature of the U.S. Census. A housing unit must have a separate entrance from other housing units but need not have separate kitchen facilities.

"Infrastructure": The grid of public capital improvements (roads, water and sewer) that is necessary to make urban development (including housing) occur. Essential infrastructure is that infrastructure which must be in place for the house to be habitable.

"Low-Income Households": Households earning 50-80 percent of the median household income.

"Market-Rate Units": Market-rate units are those dwelling units available at prices or rents at or above market-rate, which are those prices or rents determined by the marketplace. When market prices or rents are bid up, many households are unable to compete for housing in the marketplace.

"Median Household Income": The middle point at which half of the City's households earn more and half earn less.

"Moderate-Income Households": Households earning 80-120 percent of the median household income.

"Persons per Household (PPH)": The statistical average number of persons in a household.

"Second Unit": A separate dwelling unit that is either attached to another dwelling unit or completely detached from another dwelling unit.

"Very Low-Income Households": Households earning less than 50 percent of the median household income.

"Unit": A basic way of counting homes. The number of units is the number of homes.

THE OPEN SPACE/CONSERVATION ELEMENT

**APPROVED BY THE CITY COUNCIL
SEPTEMBER 22, 1998**

V. THE OPEN SPACE/CONSERVATION ELEMENT

I. INTRODUCTION, PURPOSE AND AUTHORITY

A. INTRODUCTION

The parks, open spaces and natural resources of a community have a major affect on the quality of life in a community and the overall character of the region. The park and recreation facilities in Hercules provide opportunities for members of the community to enjoy a variety of recreational and educational activities and interact with others. Trails provide access to outdoor areas and provide alternatives to driving automobiles. Usual locations for trails are within parks and open space areas, along creeks, along waterfronts, and between residential, employment, commercial and public areas. Open spaces perform a valuable function in enhancing the identity of Hercules, and providing buffers between incompatible land uses and from natural hazards such as landslides on steep slopes and flooding in low lying areas.

The conservation of natural resources is a local, state and national concern that starts within the community. Hercules has a number of natural resources that are often overlooked within an urban area. A primary resource relates to water; creeks, wetlands, the waterfront and the force of water during storms are all of concern. While Hercules does not have substantial wildlife and habitat areas such as occur in the unincorporated areas of the County, it does have sensitive habitats in wetlands, along the San Francisco Bay shoreline, along Refugio Creek, and to a lesser extent in the open space hills.

B. PURPOSE

The Open Space and Conservation Element provides direction for land use decisions regarding recreation, open space and natural resources oriented uses consistent with the goals, objectives and policies of the Land Use Element. In addition, the element addresses the management of these open space uses and natural resources.

C. AUTHORITY

1. Open Space

Government Code Section 65302(e) and 65560 et seq. requires an open space element in all city and county general plans. Section 65563:

"On or before December 31, 1973 every city and county shall prepare, adopt, and submit to the Secretary of the Resources Agency a local open space plan for the comprehensive and long-range preservation and conservation of open space land within its jurisdiction."

Government Code Section 65560:

- (a) "Local open-space plan" is the open-space element of a county or city general plan adopted by the board or council, either as the local open-space plan or as the interim local open-space plan adopted pursuant to Section 65563.
- (b) "Open-space land" is any parcel or area of land or water which is essentially unimproved and devoted to an open-space use as defined in this section, and which is designated on a local, regional or state open-space plan as any of the following:
 - (1) Open space for the preservation of natural resources including, but not limited to, areas required for the preservation of plant and animal life, including habitat for fish and wildlife species; areas required for ecologic and other scientific study purposes; rivers, streams, bays and estuaries; and coastal beaches, lake shores, banks of rivers and streams, and watershed lands.
 - (2) Open space used for the managed production of resources, including but not limited to, forest lands, rangeland, agricultural lands and areas of economic importance for the production of food or fiber; areas required for recharge of ground water basins; bays, estuaries, marshes, rivers and streams which are important for the management of commercial fisheries; and areas containing major mineral deposits, including those in short supply.
 - (3) Open space for outdoor recreation, including but not limited to, areas of outstanding scenic, historic and cultural value; areas particularly suited for park and recreation purposes, including access to lake shores, beaches, and rivers and streams; and areas which serve as links between major recreation and open-space reservations, including utility easements, banks of rivers and streams, trails, and scenic highway corridors.
 - (4) Open space for public health and safety, including, but not limited to, areas which require special management or regulation because of hazardous or special conditions such as earthquake fault zones, unstable soil areas, flood plains, watersheds, areas presenting high fire risks, areas required for the protection of water quality and water reservoirs and areas required for the protection and enhancement of air quality.

Government Code Section 65561:

The Legislature finds and declares as follows:

- (a) That the preservation of open-space land, as defined in this article, is necessary not only for the maintenance of the economy of the state, but also for the assurance of the continued availability of land for the production of food and fiber, for the enjoyment of scenic beauty, for recreation and for the use of natural resources.
- (b) That discouraging premature and unnecessary conversion of open-space land to urban uses is a matter of public interest and will be of benefit to urban dwellers because it will discourage noncontiguous development patterns which unnecessarily increase the costs of community services to community residents.
- (c) That the anticipated increase in the population of the state demands that cities, counties, and the state at the earliest possible date make definite plans for the preservation of valuable open-space land and take positive action to carry out such plans by the adoption and strict

administration of laws, ordinances, rules and regulations as authorized by this chapter or by other appropriate methods.

- (d) That in order to assure that the interest of all its people are met in the orderly growth and development of the state and the preservation and conservation of its resources, it is necessary to provide for the development by the state, regional agencies, counties and cities, including charter cities, of statewide coordinated plans for the conservation and preservation of open-space lands.
- (e) That for these reasons this article is necessary for the promotion of the general welfare and for the protection of the public interest in open-space land.

Government Code Section 65562:

It is the intent of the Legislature in enacting this article:

- (a) To assure that cities and counties recognize that open-space land is a limited and valuable resource which must be conserved wherever possible.
- (b) To assure that every city and county will prepare and carry out open-space plans which, along with state and regional open-space plans, will accomplish the objectives of a comprehensive open-space program.

Government Code Section 65563:

On or before December 31, 1973, every city and county shall prepare, adopt and submit to the Secretary of the Resources Agency a local open-space plan for the comprehensive and long-range preservation and conservation of open-space land within its jurisdiction.

Government Code Section 65564:

Every local open-space plan shall contain an action program consisting of specific programs which the legislative body intends to pursue in implementing its open-space plan.

Government Code Section 65566:

Any action by a county or city by which open-space land or any interest therein is acquired or disposed of or its use restricted or regulated, whether or not pursuant to this part, must be consistent with the local open-space plan.

Government Code Section 65567:

No building permit may be issued, no subdivision map approved, and no open-space zoning ordinance adopted, unless the proposed construction, subdivision or ordinance is consistent with the local open-space plan.

Public Resources Code Section 5076:

In developing the open-space element of a general plan as specified in subdivision (e) of Section 65302 of the Government Code, every city and county shall consider demands for trail-oriented recreational use and shall consider such demands in developing specific open-space programs. Further, every city, county, and district shall consider the feasibility of integrating its trail routes with appropriate segments of the state system.

2. Conservation

Government Code Section 65302(d) requires a conservation element of all city and county general plans as follows:

A conservation element for the conservation, development, and utilization of natural resources, including water and its hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals, and other natural resources. That portion of the conservation element including waters shall be developed in coordination with any county-wide water agency and with all district and city water agencies which have developed, served, controlled or conserved water for any purpose for the county or city for which the plan is prepared. Coordination shall include the discussion and evaluation of any water supply and demand information described in Section 65352.5, if that information has been submitted by the water agency to the city or county. The conservation element may also cover:

- a) The reclamation of land and waters.
- b) Flood control.
- c) Prevention and control of the pollution of streams and other waters.
- d) Regulation of the use of land in stream channels and other areas required for the accomplishment of the conservation plan.
- e) Prevention, control and correction of the erosion of soils, beaches and shores.
- f) Protection of watersheds.
- g) The location, quantity and quality of the rock, sand and gravel resources.

Public Resources Code Section 2762: (Mineral Resources)

- (a) Within 12 months of receiving the mineral information described in [Public Resources Code] Section 2761, and also within 12 months of the designation of an area of statewide or regional significance within its jurisdiction, every lead agency shall, in accordance with state policy, establish mineral resource management policies to be incorporated in its general plan which will:
 - (1) Recognize mineral information classified by the State Geologist and transmitted by the [State Mining and Geology] board.
 - (2) Assist in the management of land use which affect: areas of statewide and regional significance.
 - (3) Emphasize the conservation and development of identified mineral deposits.

- (b) Every lead agency shall submit proposed mineral resource management policies to the board for review and comment prior to adoption.
- (c) Any subsequent amendment of the mineral resource management policy previously reviewed by the board shall also require review and comment by the board.

Public Resources Code Section 2763:

- (a) If the area is designated by the board as an area of regional significance, and the lead agency either has designated that area in its general plan as having important minerals to be protected pursuant to subdivision (a) of Section 2762, or otherwise has not yet acted pursuant to subdivision (a) of Section 2762, then prior to permitting a use which would threaten the potential to extract minerals in that area, the lead agency shall prepare a statement specifying its reasons for permitting the proposed use, in accordance with the requirements set forth in subdivision (d) of Section 2762. Lead agency land use decisions involving areas designated as being of regional significance shall be in accordance with the lead agency's mineral resource management policies and shall also, in balancing mineral values against alternative land uses, consider the importance of these minerals to their market region as a whole and not just their importance to the lead agency's area of jurisdiction.
- (b) If the area is designated by the board as an area of statewide significance, and the lead agency either has designated that area in its general plan as having important minerals to be protected pursuant to subdivision (a) of Section 2762, or otherwise has not yet acted pursuant to subdivision (a) of Section 2762, then prior to permitting a use which would threaten the potential to extract minerals in that area, the lead agency shall prepare a statement specifying its reasons for permitting the proposed use, in accordance with the requirements set forth in subdivision (d) of Section 2762. Lead agency land use decisions involving areas designated as being of statewide significance shall be in accordance with the lead agency's mineral resource management policies and shall also; in balancing mineral values against alternative land uses, consider the importance of the mineral resources to the state and nation as a whole.

II. OPEN SPACE USES AND NATURAL RESOURCES

The open space conservation element is concerned with the conservation, development and utilization of the natural resources within the city. These resources include:

- Air Quality
- Parks and Open Space
- Water Supply
- Water Quality
- Hydrology
- Land Resources
- Vegetation
- Wildlife

A. PARKS AND OPEN SPACE

1. Parks

The City of Hercules has one community park, the 55-acre Refugio Valley Park, four smaller neighborhood parks totaling approximately 31 acres, and two mini-parks totaling 2.5 acres. Refugio Valley Park consists of Refugio Lake and associated facilities at Refugio Valley Road and Pheasant Drive. There is also a linear path and a community/swim center along the north side of Refugio Valley Road. A new waterfront park of 20 acres is proposed along the San Pablo Bay waterfront adjacent to the existing East Bay Regional Park District lands. The Waterfront Park will incorporate the waterfront trail running the length of the City's waterfront. No schedule has been established for development of the proposed Waterfront Park. It is anticipated that there will also be a new park in the Franklin Canyon/sphere of influence area to serve the anticipated population within this area.

The neighborhood parks include Ohlone Park on Turquoise Drive adjacent to Ohlone School; Hanna Park adjacent to the Hanna Ranch School at the east end of Refugio Valley Road; Woodfield Park on Lupine Road adjacent to Hercules Elementary School; Foxboro Park on Canterbury Drive; Railroad Mini Park on Santa Fe Avenue; and Beechnut Mini Park on Beechnut Court. Existing multi-purpose ballfields in Hercules, at Ohlone and Woodfield Parks, are being used to capacity by City-run sports programs.

A new community park, Hanna Park, is planned adjacent to the Hanna Ranch School at the east end of Refugio Valley Road. A new multipurpose ballfield (for baseball/softball and soccer), that would occupy about 6 acres of the planned 11 10 acre park is scheduled for completion. The remainder of the Hanna Park facilities are scheduled for funding from developer fees, although no time schedule is set and the availability of adequate funds is uncertain. Another neighborhood park is scheduled for development on a city-owned site in the Forest Run neighborhood just west of I-80. This 6 acre park will be developed for passive recreational use with facilities such as a walking path, benches, and picnic tables. A 5 acre park is proposed to be built in conjunction with the new elementary school west of I-80.

The General Plan Growth Management Element and Open Space/Conservation Element contain the following minimum standards for parks and open space (per 1,000 population): 3.25 acres of community parks and 1.75 acres of neighborhood parks. Based on a 1996 population of 19,400, the City currently provides adequate neighborhood parks, but provides less than the required acreage of community parks.

Under the projected buildout of the General Plan in 2010, the City would have approximately 25,100 people, resulting in the need for about 81.5 acres of community parks and about 44 acres of neighborhood parks, to meet park standards. Assuming that the 26 acre Waterfront Park were developed by the time of buildout, the City would have about 81 acres of community parkland, meeting the community park standard. If the 6-acre Forest Run Park and the 5 acre park proposed with the new school west of I-80 were developed by buildout, the City would have about 44.5 acres of neighborhood and mini parks, meeting the neighborhood park standard.

2. Open Space

The City also has approximately 950 832 acres of trails and open space, predominately located along Refugio Creek on both sides of I-80, in the southwest portion of the City near the Historic District, and among the residential areas in Refugio Valley in the eastern portion of the City. In addition, the Civic Center area includes the Hercules Heritage Garden Project which is a community based effort to recreate a California native woodland. The purpose of the project is to increase awareness of the rapidly disappearing California native woodland while providing an open space area that can be used for a relaxed, outdoor community meeting place.

The open space areas of Hercules are also an educational resource for the community which provide the opportunity to visit and study a variety of plant communities and wildlife habitats in close proximity to developed areas.

Based on a 1996 population of 19,400 and a standard of 34 acres of public and private open space per 1,000 population, the City currently provides adequate open space. The proposed Lower Refugio Creek open space corridor of approximately 20 acres, added to the existing 832 acres of open space would total about 852 acres, meets the open space standard of 853 acres for the buildout population. Some additional amount of open space is also anticipated within the remaining undeveloped properties located in the Lower Refugio Valley. It is anticipated the Franklin Canyon site will provide approximately 220 acres of additional open space.

The City of Hercules has adopted the Briones Hills Agricultural Preservation Agreement which has been adopted by six other cities (Lafayette, Martinez, Orinda, Pinole, Pleasant Hill and Richmond) and Contra Costa County. The agreement protects a 64 square mile area to the east and south of Hercules through a joint policy of not annexing any land within the preservation area to urban service districts or cities.

3. Trails

The East Bay Regional Park District (EBRPD), City of Hercules and City of Pinole, under a Joint Powers Authority, undertook a Shoreline Feasibility Study in 1986 to investigate the feasibility of developing a shoreline trail between Point Pinole in Pinole and Lone Tree Point in Rodeo, and to identify possible trail alignments. The feasibility study shows three possible trail alignments across the parcels: a pedestrian, bicycle and equestrian trail linking the shoreline and Historic Hercules to San Pablo Avenue; a boardwalk over the marsh/wetlands area south of Hercules Point; and a pedestrian trail along the inland side of the railroad parallel to the shoreline.

The land use diagram within the Land Use Element depicts a regional Shoreline Trail that runs along the shoreline on the inland side of the Union Pacific Railroad. This alignment has not been approved by the EBRPD, although the district views the future development of the Shoreline Trail through Hercules as a long-term goal, and will work with future property owners and the City towards a development agreement.

4. Scenic Areas

Hercules has a scenic setting where the higher areas east of I-80 over look the San Pablo Bay with distant views of the coastal range in Marin County. Areas west of I-80 closer to the Bayfront also have scenic views. In addition the Highway 4 corridor through Franklin Canyon has scenic views of the valley and adjacent hillside grasslands and oak woodlands. The Circulation Element has recognized the scenic character of San Pablo Avenue and Highway 4 by designating them as scenic routes and providing implementation measures for development along them.

B. WATER SUPPLY

Potable water is currently supplied to the City of Hercules by the East Bay Municipal Utility District (EBMUD) through the Maloney and Mendocino Pressure Zones. The Maloney Pressure Zone is served by the Crockett Aqueduct and Sobrante Filter Plant, and supplies potable water to part of Richmond and elevations in Hercules between 0 and 200 feet mean sea level (msl). A cascade water system is used to pump water to several elevations higher than 200 feet msl. The Mendocino Pressure Zone serves elevations between 200 - 400 feet msl, and is the primary potable water source for recent residential development in the City. Storage systems for elevations between 200 - 400 feet msl are currently nearing capacity. Both zones provide adequate potable water supply and pressure to the City.

EBMUD schedules capital improvements (e.g., storage systems, reservoirs, and pumping plants) based upon ABAG's Projections '90 household projections. If a development would result in a higher number of households than ABAG projected for year 2010, additional capital improvements could be required, including pumping plants, storage tanks, and/or distribution pipelines. EBMUD expects to examine potential revision of its system capacity charge (the fee that new users are charged for connection to the distribution system) as part of a master planning process to be completed for the area including Hercules. Expected new development for buildout of the City would be taken into account in this planning process, and the system capacity charge could be adjusted so that required distribution improvements would be possible.

C. WATER QUALITY

Water quality is affected by a number of pollutants that are carried into surface and ground waters by runoff. These pollutants include oil and grease from roadways; agricultural pollutants and fecal coliform bacteria from crop and grazing lands; low levels of heavy metals from the former munitions factory or from the watershed area southwest of I-80; and general debris from roadways. Monitoring of water quality indicated the shallow groundwater to be brackish and non-potable, but also not substantially affected by previous industrial uses of the properties.

New development along Refugio Creek would cause an increase in impermeable surfaces with the potential for increased flooding. New commercial facilities could introduce point sources of pollution for any pollution source that would not discharge into an established sewer system. These sources would require a National Pollution Discharge Elimination System (NPDES)

permit. Development of these areas could also increase the load of nutrients, metals, oil and grease carried in runoff from roadways to surface and ground waters.

1. Wastewater Management

The City is served by two sewage treatment plants, the Pinole-Hercules plant and the Hercules Sewage Treatment plant. Existing capacity of the Pinole-Hercules plant is approximately 3.8 million gallons per day (mgd) average wet weather flow (AWWF),¹ and the existing capacity of the Hercules plant is about 0.35 mgd. The entire capacity of the Hercules plant is used exclusively by the City of Hercules. The City, as part of the assessment district for the Pinole-Hercules plant, has a current capacity and allocation of 2.04 mgd of the total capacity of this plant. Because the Pinole-Hercules plant operates at less than design capacity, Hercules currently has access to about 1.9 mgd of treatment capacity at that plant. The total current wastewater treatment capacity owned by the City of Hercules is approximately 2.4 mgd. About 2.3 mgd is currently available. The remaining capacity at Pinole is expected to be available following several minor capital improvements that are planned for the facility.

The Pinole-Hercules wastewater treatment plant is jointly owned by the cities of Hercules and Pinole. Operation and maintenance of the plant is provided by the City of Pinole, and the City of Hercules reimburses costs incurred in treating Hercules' wastewater.

2. Water Reclamation

Water reclamation in Hercules is expected to be potentially attractive only if local reclamation is affected and will be long-term. Reclamation feasibility will, to a large extent, be dependent upon the geographical relationship between the supply and the demand.

The City should develop a reclamation policy and plan which would ensure the full realization of any future potential. The plan should provide for:

- 1) System development
- 2) Right-of-way and easement reservation.

D. HYDROLOGY

The City of Hercules is adjacent to San Pablo Bay and is influenced by its waves, tides, and salinity. Existing waterfront development around Hercules Point, including a wharf, was constructed by the Hercules Powder Company. Extensive mudflats occur in shoal areas offshore, extending over a quarter mile out in some areas. Water depths offshore are very shallow, less than 12 feet deep for almost a mile offshore. The highest tide on record is approximately 7.2 feet; however, wave heights could be substantially larger during a storm.

¹ AWWF is the average flow during wet weather, including the effects of rainwater infiltrating into the system.

The City of Hercules is within three major drainage basins, all of which outfall into San Pablo Bay, and are thus subject to tidal influences. Pinole and Rodeo Creeks drain relatively small portions of the City. Refugio Creek and its tributaries drain the bulk of the City and also a significant basin upstream of the City. Pinole and Rodeo Creeks are adjacent to the north and south City boundaries and drain the neighboring communities for which they are named. Relatively small portions of the City are drained by these creeks.

The City of Hercules is located mostly in the Refugio Valley along the western shore of San Pablo Bay, on the northeast side of the San Francisco Bay Area. Much of the Refugio Valley has elevations ranging from 7.5 to 14.3 feet above mean sea level (MSL), but the high ground surrounding portions of it rises to over 200 feet above MSL in the study area and more than 500 feet above MSL on the surrounding ridge lines. Mean annual precipitation is approximately 20 inches, and mean annual runoff is about three inches. The general trend of drainage in the area is to the northwest into San Pablo Bay. Refugio Creek is the main drainage feature within the City.

Flooding is a recognized hazard in some areas of Hercules. Storm water flooding of Refugio Valley occurs during periods of heavy rainfall and runoff, coincident with high tides affecting Refugio Creek. A backwater effect is created that prevents effective flood water discharge to San Pablo Bay. Extensive flooding of Refugio Creek occurred during severe storms of January 1983, with the creek overflowing its banks. A large area west of I-80 along is within the 100-year floodplain of Refugio Creek. See the Flood Zones Map within the Safety Element. Runoff in urban areas increases with the amount of impermeable surfaces created. Drainage facilities help control this runoff. Flooding is addressed in more detail within the Safety Element.

1. Pinole Creek

Pinole Creek was recently improved by the Corps of Engineers and is presently operated and maintained by the Contra Costa County Flood Control District. The reach within Hercules is a trapezoidal channel located adjacent to the Hercules Pinole boundary.

In its present state, the Creek is sterile and unattractive but still has potential. The Cities of Pinole and Hercules, in cooperation with the Flood Control District, should develop a riding/hiking plan reinforced with landscaping which will enhance and permit the full utilization of this potential asset.

2. Refugio Creek

Refugio Creek is the primary surface water source within the City. The lower Creek is in an inadequate channel with a history of overflowing. Refugio Creek flows into San Pablo Bay. The westernmost portion of Refugio Creek is tidally influenced. Refugio Creek is not in its natural channel, apparently having been straightened, deepened, and channeled by the former Hercules Powder Company property owners in the early part of the century. The original channel of the creek is not known. A portion of Refugio Creek is culverted beneath the Creekside Shopping Center adjacent to I-80; the creek also passes through a culvert near where the Burlington

Northern and Santa Fe Railway tracks pass beneath 1-80. The upper channel is on a relatively steep gradient which causes erosion and slumping of side slopes.

3. Rodeo Creek

Rodeo Creek is located just east of the Hercules City boundary in the western area of the City and extends into the sphere of influence area and Franklin Canyon in the east. It is presently being improved per the requirements of the Flood Control District to increase the flood flow capacity of the Creek and provide public access. Provision has been made for increased runoff from Hercules in the design of these improvements.

4. Storm Drainage

Storm drainage is collected by a storm drainage system and transported to Refugio Creek, and flows into San Pablo Bay. The Refugio Creek drainage network includes a flow storage facility in the form of an on-stream reservoir located in Refugio Park in addition to its use as a recreational and scenic amenity, the reservoir stores excess runoff water during storm. The existing drainage system in Hercules is adequate for areas that are currently developed. (See Circulation Element for maps of storm sewer mains)

Current federal National Pollutant Discharge Elimination Standards (NPDES), which regulate outfall pipe standards, could require construction of additional retention basins as well as pretreatment of existing storm waters. These standards would be implemented as new projects are developed. The City's Stormwater Management Plan contains Best Management Practices (BMPs) that would be implemented on a time frame as the City reaches physical buildout. The City's municipal permit was updated on September 15, 1993.

The City should develop a master drainage plan which provides for:

- 1) The definition and conservation of existing drainage courses of high aesthetic value.
- 2) The improvement of these channels such that adequate capacity for expected flood flows is provided.
- 3) The maximum utilization of these drainage courses for buffers, open space, pedestrian circulation, recreation, aesthetics, flood control, etc.
- 4) The enhancement of these drainage courses with landscaping, remedial measures and improved public access. The City should also develop ordinances and enforcement mechanisms which will preserve, develop and maintain these drainage courses.

5. Erosion

Erosion is the process where earth and soil are worn down and transported away by the motion of water. There is coastal erosion along the shoreline of Hercules due to waves. This results in hazards to structures along the shore, and siltation to the Bay. Erosion from runoff and stormwaters occurs along unvegetated hillsides and slopes, drainage channels and other areas of

bare ground. Gullying also occurs within Hercules as a result of this type of erosion. Erosion affects water quality and wildlife habitats along with slope stability and damage to property.

6. Groundwater

Groundwater underlies Refugio Valley at relatively shallow depths. There are likely several distinct water bearing zones in the bedded sediments in the valley, including a very shallow, but discontinuous perched zone. Throughout the lower valley, especially west of I-80, the winter water table is typically less than two to three feet deep, and declines to five to six feet during most summer months. Groundwater in the very shallow zone may be only six inches deep in the winter months of wet years. Refugio Creek is thus fed by tides and surface water runoff during winter months and by groundwater discharge during the summer months.

E. AIR QUALITY

The primary factors that affect air quality are the number and locations of stationary and mobile air pollutant sources and the amounts of pollutants emitted. Meteorological and topographic conditions also important in determining the movement and dispersal of air pollutants.

Land uses considered to be relatively sensitive to air pollution include schools, hospitals, senior housing and convalescent homes, and residential areas. The Bay Area Air Quality Management District (BAAQMD) monitors air quality and enforces air quality violations in the San Francisco Bay Area. Air pollutant criteria are enforced for ozone (O₃), carbon monoxide (CO), particulate matter (PM₁₀), Nitrogen Dioxide (NO₂), Sulfur Dioxide (SO₂) and Lead (Pb). Odorous emissions are also regulated. The bay area has been found to be in non-attainment for state standards regarding ozone and particulate matter, and transitional for carbon monoxide. The air monitoring stations in Richmond and Vallejo have had few violations of air quality in recent years except for particulate matter and ozone.

The major contributor to air quality problems within the Bay Area is vehicle traffic which generates 45% of the air contaminants potentially affecting public health. As such, methods to decrease the vehicle traffic associated with existing and new land uses is a primary concern. The City is actively pursuing grant funding for technical feasibility studies for the location of a train station in the Lower Refugio Valley. This is anticipated to have a regional benefit in reducing vehicle trips and associated air pollution.

F. LAND RESOURCES

1. Geology and Soils

Preliminary geologic and soils studies indicate the land within the City can be developed for the urban uses contained in the Land Use Element of the Plan. However, the presence of surface landslides, expansive soils, steep slopes and compressible valley fills will require detailed soil investigations and inspection during construction.

Alluvium in the Refugio Valley varies from about 12 feet in thickness in the southeast portion of the valley to about 80 feet in thickness near the valley. Near San Pablo Bay, a few feet of fine-grained flood plain alluvium cap weak and highly compressible bay mud deposits. The bay mud has an estimated thickness of 35 to 40 feet along the western edge of the valley, thinning out in an upvalley direction.

There are no significant active faults within the City. The several mapped in the City are believed to be inactive and their existence has never been confirmed by field explorations. Additional discussion of geology and geologic hazards is contained in the Safety/Seismic Safety Element.

2. Mineral Resources

The State of California adopted the Surface Mining and Reclamation Act of 1975 (SMARA) with a recognition that the extraction of minerals is essential to the continued economic well-being of the state and to the needs of society, and that the reclamation of mined lands is necessary to prevent or minimize adverse effects on the environment and to protect the public health and safety. The intent of SMARA is to establish policies for surface mining and reclamation that assure that adverse environmental effects are reduced, eliminated or avoided, and that reclamation is completed, while encouraging the continued Production and conservation of minerals. The Act further states that it does not permit a limitation on the police power of any city or county, or on the power of any city or county to regulate the use of buildings, structures and land within its jurisdiction.

SMARA requires the State Geologist to classify existing or potential mineral resource sites within areas of the state that are urbanized or subject to irreversible land uses that would preclude mineral extraction. There are four classifications of Mineral Resource Zones (MRZ) that are generally applied, the most significant of which is MRZ-2.

MRZ-1: Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that there is little likelihood exists for their presence. This zone shall be applied where the likelihood for occurrence of significant mineral deposits is nil or slight.

MRZ-2: Areas where adequate information indicates that significant mineral deposits are present or where it is judged that there is a high likelihood for their presence exists. This zone shall be applied to known mineral deposits or where the likelihood for occurrence of significant mineral deposits is high.

MRZ-3: Areas containing mineral deposits the significance of which cannot be evaluated from available data.

MRZ-4: Areas where available information is inadequate for assignment to any other MRZ zone.

Where significant mineral resources are identified and designated, SMARA requires local agencies to prepare and adopt mineral resource management policies as part of the jurisdiction's General Plan. These policies 1) recognize mineral information classified by the State Geologist, 2) assist in the management of land use which affects areas of statewide and regional significance, and 3) emphasize the conservation and development of identified mineral resources. Before their adoption, local jurisdictions must submit these policies to the State Mining and Geology Board for review and comment.

The Mineral Land Classification Map prepared by the Division of Mines and Geology for the Hercules area contains areas designated MRZ-1, MRZ-3 and MRZ-4. No significant mineral deposit areas, MRZ-2, are identified. However, the guidelines for to implement SMARA suggest the following for MRZ-3 zones:

"Prior to permitting a use which would threaten the potential to extract minerals classified by the State Geologist as MRZ-3, the lead agency may cause to be prepared an evaluation of the area in order to ascertain the statewide or regional significance of the mineral deposits known or inferred to be located therein. The results of such an evaluation shall be transmitted to the State Geologist and to the State Mining and Geology Board for review and comment.

MRZ-3 zones have been mapped for the hills to the north and south of Highway 4 east of Highway 80 and the high area north of John Muir Parkway to the west of Highway 80. However, there is no information to suggest that these areas have extractable minerals of commercial value such that existing and planned land uses would be of less benefit to the community and region.

3. Land Form

Property in the City is characterized by gentle to-steep grass-covered hills with trees clustered in the water courses and on the hillsides. The higher elevations provide panoramic views of San Pablo Bay.

Topographic relief consists of a series of northwest trending ridges which have a maximum elevation of about six hundred feet, and which decreases in elevation northwesterly toward the lowlands adjoining San Pablo Bay. Side slopes have been eroded by numerous steep sided gullies emptying into narrow valleys which widen as they drain northwesterly into San Pablo Bay.

The grading concept underlying the Land Use Element of the General Plan includes the grading of ridges and selective filling of valleys allowing existing side slopes to remain in their natural condition. This concept eliminates the need for high graded slopes. Sensitive contour grading and landscaping techniques will provide a transition between developed areas and the open space.

4. Prehistoric and Historic Resources

Prehistoric Resources: In the northwest portion of Contra Costa County, prehistoric sites are generally found near the edge of historic bay margins, on valley and midslope terraces, and in hilly areas on terraces near seasonal watercourses. Continual occupation of bay margins in this

area of Contra Costa County has yielded numerous aboriginal village and camp sites; a combination of bay shellfish and fish resources, and the presence of an environment that attracted both wildlife and birds, made these locations attractive as living areas.

In the late 1800's, Native Americans who lived in the Hercules vicinity spoke the Xucyun Ohlone language. One confirmed prehistoric site (CA-CCO-370) is located within the area west of I-80. Preservation of the site has been facilitated by the conservation of a number of buildings in the City's Historic District which overlay the resource. An unconfirmed site which was described in 1910 as "a scant deposit of what was once probably a large village" is supposed to be located west of I-80 inland of Hercules Point. The general vicinity of the site was disturbed by the construction of a nearby dam.

Historic Resources: Located within the Pinole land-grant, Hercules was established in the late 1800s as a company town of the Hercules Powder Company. At the company's height, the company's land was 3,000 acres and included the use of many gullies for mixing and packing explosives. The gullies separated mixing and packing operations and provided a safety feature for possible explosions. Properties located partially or entirely in gullies and may contain archaeological deposits such as dynamite magazines.

Several Hercules Powder Company buildings and Victorian-style homes remain from the historic company town. The Powder Company buildings include an administrative center, office and various plant buildings. The company administrative offices are listed in the National Register of Historic Places. The City recognizes the other buildings as being an important historical resource. Other remaining Powder Company structures which include rusted industrial frameworks, pipelines and tanks are not regarded as an important historical resources.

In 1977, the City commissioned an architectural evaluation of the Hercules Powder Company buildings and Victorian-style company homes. As a result of the study, the City designated buildings that would be considered for conservation or demolition, and subsequently expanded the Historic District. The company homes were renovated and relocated to the expanded Historic District area, south of the former administrative center. In 1980, the company homes were listed in the National Register of Historic Places.

G. VEGETATION AND WILDLIFE

1. Vegetation

Natural vegetation communities are recurring combinations of species that reflect parallel responses to similar combinations of environmental conditions, as defined by the California Native Plant Society (CNPS). Plant communities play an important role in the ecosystem as they provide water, food, shelter, and foraging grounds for a variety of wildlife species as well as improving water quality and preventing soil erosion.

Salt Marsh and Freshwater Wetlands: Salt marsh is a transitional community occurring along margins of bays, lagoons and estuaries sheltered from excessive wave action. The upper part of

estuaries grade into brackish and freshwater marshes. Within the City of Hercules this habitat occurs on Hercules Point and Refugio Valley.

Coast and valley freshwater marsh is dominated by perennial, emergent monocots, often forming completely closed canopies. This community prefers areas lacking strong currents that are permanently flooded with freshwater. Typical species found in this community also includes sedges, spike-rush, tule, and cattail. Due to the regional loss of habitat and potential for this community to support a number of special status plant and wildlife species, freshwater marsh is considered a community of concern by the California Department of Fish and Game (CDFG).

Riparian: The willow scrub riparian community is an open to dense, broadleaf, winter-deciduous streamside thicket dominated by any of several willow species, usually as small trees or shrubs. Arroyo willow is the dominant canopy species occurring in this riparian community throughout Hercules. The remaining willow community in Hercules occurs along the main channel of Refugio Creek east of I-80.

Central Coast live oak riparian forest forms a low, riparian forest dominated by coast live oak. The understory in this community is generally composed of fairly extensive native bunchgrasses and non-native grasses along with scrub and chaparral species. This community occurs along the banks of drainages in the southeastern portion of Hercules and the hillsides of Refugio Valley.

The east branch of Refugio Creek, which flows from the southeastern portion of Hercules to the northwest and joins with the main channel of Refugio Creek, contains a diverse flora composed of California bay, coast live oak, and arroyo willow, with the dominant species being willow. This riparian community commonly occurs in outer floodplains along perennial and ephemeral streams.

Non Native Trees: Eucalyptus groves are the dominant non native tree masses within Hercules, and are predominately blue gum. Shade created by the eucalyptus canopy, combined with volatile chemicals contained in the large amount of bark and leaf litter deposited by eucalyptus, create poor growing conditions for most understory species. The City has considered removing some of the eucalyptus trees because of concern over fire hazard and safety hazard from falling limbs and trees. Fallen eucalyptus debris also presents a street and storm drain maintenance problem.

Grassland: Non-native grassland, found in valleys and on hillsides throughout most of Hercules, is dominated by non-native species. Johnny jump-ups and California poppies are an integral part of this community's floral mosaic producing showy "blooms" during spring and early summer. Non-native grassland is commonly found on fine-textured (often clay) soils, which are moist or waterlogged during the winter rainy season, and dry during the summer/fall drought. Oak woodlands and riparian forests are often adjacent.

Wildland fire hazards associated with the open space areas of natural and introduced vegetation are addressed in the Seismic Safety/Safety Element.

2. Wildlife Habitats

Wildlife habitats are not as delineated as vegetation communities, which are defined by certain plant species adapted to specific environmental conditions. Wildlife habitats consist of an area or place where an organism lives, composed of various vegetation communities creating different areas for different life cycle needs, such as foraging areas, nesting areas, and shelter from predators.

Salt Marsh: The salt marsh is an important ecosystem providing food and cover for a variety of species including nesting endemic bird and mammal species, such as California clapper rail, California black rail, salt marsh harvest mouse and wandering vagrant shrew. These species, because of their restriction to salt marshes, are listed as endangered. Common species, such as herons and egrets, use the salt marsh for foraging while nesting in nearby riparian areas. Waterfowl use salt marshes during the winter and spring migrations along the Pacific Flyway.

Fresh Emergent Wetland: This transitional habitat occurs between terrestrial and aquatic systems where water tables are near the surface or land is covered by shallow water. Grass-like plants, which emerge from the water, form a dense canopy in this type of habitat. Fresh emergent wetland habitat is the same as the freshwater wetland community. This community, mostly found along and in the vicinity of Refugio Creek and its tributaries, is one of the most productive habitats for wildlife in that it offers water, food and cover for a variety of species.

Willow Riparian: This habitat is a low shrubby tree structure that can cover an entire watercourse, with an impenetrable understory and includes fallen limbs and other debris. This habitat is the same as the Willow scrub community. Within the City of Hercules this habitat occurs along Refugio Creek east of 1-80, with pockets along the Western Branch of Refugio.

The willow riparian habitat attracts bird species that hover while catching insects, such as warbling vireo, and black phoebe. Other species such as mallards and snowy egrets use the shallow quiet waters of the stream to forage for vegetation and small fish. Predators, such as sharp-shinned hawks and red-shouldered hawks, nest in the high canopy and feed on the smaller birds and amphibians. Omnivores, such as the raccoon and striped skunk, forage on invertebrate species, plant parts, amphibians and fruits.

Coast Live Oak Riparian: This habitat is an open, low, evergreen forest. Found in canyon bottoms and the drier outer floodplains, the understory for this habitat is blackberry bushes and wild rose in the wetter areas and often grasses in the drier areas. Within the City of Hercules this habitat occurs along the southeastern portion of the City. As with other riparian habitats, coast live oak riparian provides water, foraging, nesting, cover, and migrating and dispersal corridors for a variety of wildlife species.

Non-Native Grassland: This habitat is based largely on cattle grazing which opens up the land to non-native grasses, annual grasses that grow during the winter and spring and die during the summer. Annual grassland now supports wildlife species that were once found in native grasslands. Within the City of Hercules this habitat occurs in most areas that are undeveloped.

Grassland habitat attracts seed eaters as well as insect eaters. California quail, mourning dove, and meadowlarks are a few seed eaters that use grasslands for nesting. Insect eaters such as scrub jays, barn swallows, and mockingbirds use the habitat for foraging only. Mule deer will use grassland for grazing and for nesting at night. Small rodents attract raptors such as red-tailed hawks and red-shouldered hawks. Southern alligator lizard and Pacific slender salamander use the grassland for invertebrates found within and underneath fallen logs.

Disturbed Lands: Residential parks and disturbed areas provide little habitat for wildlife except for those species such as starlings, golden crowned sparrows, and rock pigeons. These areas do not provide habitat for the larger mammalian species or for predators, except as possible movement corridors. This habitat occurs in developed and/or partially developed areas.

3. Regulatory Framework

Wetland Protection: Section 404 of the Federal Clean Water Act regulates discharge of fill material into "waters of the United States," which include wetlands, and, in some cases, even man-made channels. The U.S. Army Corps of Engineers (Corps) must issue a permit for projects that propose filling of wetlands. Riparian habitats are generally not subject to Section 404 jurisdiction, unless these areas are within the "ordinary high water mark" of a stream or channel or otherwise meet the wetland criteria.

In addition to the Corps' regulatory authority over "waters of the United States," the California Department of Fish and Game has authority to oversee work in streams pursuant to Fish and Game Code Sec. 1601-1603. A landowner or agency proposing to significantly alter the natural flow of a stream, significantly change its bed or bank, including bridging, or to use any material from the streambed, must enter into a "Streambed Alteration Agreement" with the CDFG.

The San Francisco Bay Conservation and Development Commission (BCDC) has jurisdiction over the tidelands and shoreline area of Hercules. Specifically, BCDC has shoreline jurisdiction 100 feet inland of the high tide line, estimated to be 6.2 feet NGVD in Hercules and Bay jurisdiction over the adjacent Bay waters and tidelands. BCDC has authority over the wetland areas around Hercules Point and over the tidal mudflats up to the railroad grade. BCDC priorities are generally for water-related projects that propose minimum fill and maximum feasible public access.

Special Status Species: Special status species are as rare, threatened or endangered and those of other public concern. No special status plant species have been found within Hercules to date. However, Santa Cruz Tarweed, listed by the state as an endangered species, has been observed along the shoreline in Alameda and Contra Costa Counties. Habitats for several special status wildlife species occur in Hercules within areas to be developed. These include the California red-legged frog, northwestern pond turtle, southwestern pond turtle, ferruginous hawk, black-shouldered kite, California horned lark, saltmarsh yellowthroat, loggerhead shrike, Pacific western big-eared bat, and Ricksecker's water scavenger beetle. The EIR for the Land Use and Circulation Elements Update contains detailed descriptions of these habitats and corresponding mitigation measures.

III. THE OPEN SPACE/CONSERVATION PLAN

The Open Space and Conservation Element provides for the comprehensive and long-range conservation, and enhancement of the environmental resources within the City. The Open Space and Conservation Plan map shows the distribution of the following types of open space:

- Public open spaces
- City parks
- School athletic fields
- Baylands
- Regional Hiking Trails
- Regional Riding Trails
- Local Trails

A. GOALS

The basic goal of the Open Space and Conservation Element is to provide for both human and environmental needs in creating a natural environment compatible with urban development by the wise use and enhancement of natural resources within the City.

Subgoals are to:

- a. Develop a plan to preserve and maintain open space within the community.
- b. Establish a management program for the conservation and enhancement of the natural amenities in the City.
- c. Incorporate conservation areas such as drainage courses, areas of natural vegetation and baylands into the open space system.
- d. Provide for the linkage of public and private open spaces throughout the community.

San Pablo Bay

City of Hercules Open Space and Conservation Plan

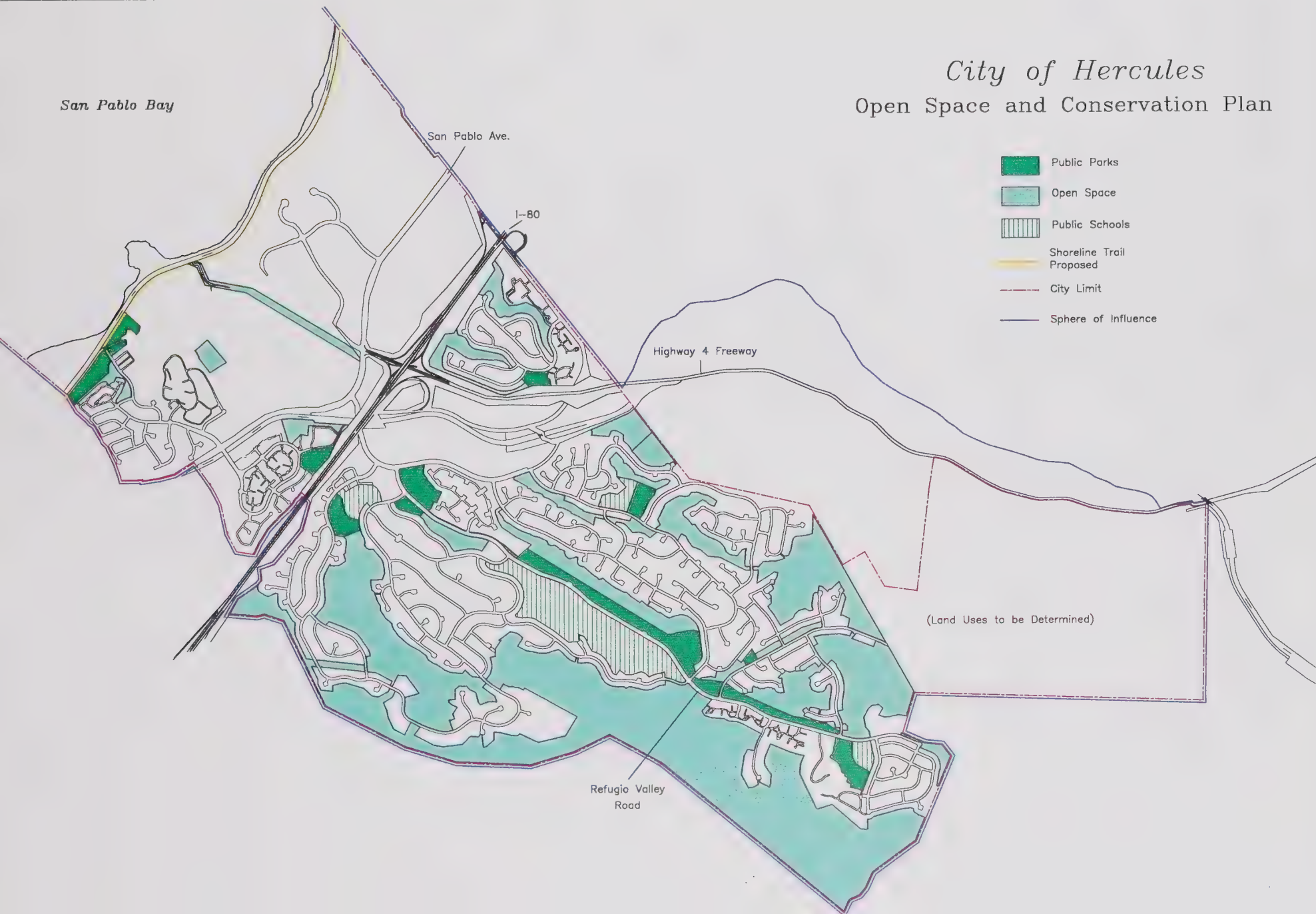


TABLE 1: HERCULES PARKS AND OPEN SPACE

	Name	Existing Acreage	Proposed Acreage	TOTAL
Community Parks	Refugio Valley Park and Linear Path	55 ac		
	Waterfront Park and Waterfront Trail		26 ac	
	Total	55 ac	26 ac	81 ac
Neighborhood Parks	Ohlone Park	11.2 ac		
	Woodfield Park	6.0ac		
	Foxboro Park	3.6 ac		
	Hanna Park	10.2 ac		
	Forest Run Park (Neighborhood 5)		6 ac	
	School Park		5 ac	
	Total	31.0 ac	11 ac	42.0 ac
Mini Parks	Railroad Mini Park	1.3 ac		
	Beechnut Mini Park	1.2 ac		
	Total	2.5 ac		2.5 ac
Open Space	City Open Space			
	Refugio Valley and Lower Refugio Creek			
	Homeowners Ass'n Open Space Corridor	832 ac	20 ac	
	Total	832 ac	20 ac	852 ac

B. OBJECTIVES, POLICIES AND PROGRAMS

PARKS AND OPEN SPACE

OBJECTIVE 1

Provide adequate recreation, park and open space resources as the community expands.

Policy 1a

Expand the community's park, trail and open space system to meet the demands of future growth. The comprehensive park, trail and open space system shall provide linkages between developed and developing areas.

Program 1a.1 Public Open Spaces

The General Plan has been designed to preserve most of the existing high quality vegetation, wildlife habitat and land forms within the public open spaces and conservation areas. Public open spaces are classified into the following areas: riparian, chaparral, oak groves, salt marsh and greenways.

1) Riparian Areas

The major riparian system is Refugio Creek from the easterly city limits to the Bay. Most of the creek east of I-80 will be maintained in a natural condition. The wildlife habitat will be enhanced by planting appropriate vegetation. Small ponds designed to reduce the velocity of water and possible erosion will also encourage wildlife in the riparian areas.

West of I-80, the existing low flow channel will be modified to the south in a multi-use open space corridor. The drainage facility will be designed and landscaped so as to have a natural appearance and enhance wildlife habitat. Some of the draws have springs which can be developed with watering holes and planting to support small animals.

2) Chaparral

The extensive side hill in the southeast portion of the City has large areas of dense coyote brush interspersed with live oaks and buckeye providing good habitat for deer and other wildlife. This area should be left in its natural state except for trails, outlooks and other limited recreational improvements.

3) Oak Groves

The oak groves in canyon bottom and side hills will be preserved in their natural state where possible. Special care should be taken in construction operations to minimize damage to this valuable natural resource.

4) Salt Marsh

The small marshland westerly of the Union Pacific Railroad, adjacent to the Waterfront Park, should be preserved in its natural state. The only improvement to this area could be an elevated walkway for observation of shorebirds and other wildlife.

5) Greenways

These areas are mostly grass covered hilltops and slopes interspersed with residential areas in the easterly portion of the City. As much as practical of this grassland within the public open spaces should be preserved in its natural state because of its value as habitat for many species of raptors.

6) Landscaped Rights-of-Way

Over 300 acres are devoted to freeways, arterial streets and railroads. Other rights-of-way include overhead power transmission lines and underground pipelines. The City should integrate these public and semi-public rights-of-way into the open space system as trails and/or visual open space.

7) Baylands

There are no proposals in the General Plan for development of the baylands with the minor exception of an elevated walkway over the salt marsh. The Recreation Element recognizes the recreational value of the baylands and indicates that potentials be explored with the several agencies having jurisdiction or interest in the future use of this natural resource. Access to the Bay is severely limited in the City because of the existence of the Union Pacific Railroad right on the shoreline. Public access to the Bay will be through the Waterfront Park, a twenty-acre community-type facility. An overhead crossing of the railroad tracks and a boardwalk through the salt marsh are proposed to provide convenient and safe public access to the water.

8) Private Open Space

Cluster housing neighborhoods and apartment complexes will have internal recreation areas and greenways which add to open space in the community. These areas will be integrated into the Open Space/Conservation Plan in terms of linkage and landscape design. Preservation of valuable vegetation will be an integral part of urban design considerations in site planning for new residential development.

Program 1a.2 City Parks

The General Plan has been designed to provide for adequate parks to serve the community. City parks include:

- Neighborhood parks
- Water front park
- Community parks
- Mini Parks
- Picnic grounds, and
- Bicycle and hiking trails

1) Neighborhood Parks: The five-acre neighborhood parks adjoining elementary schools may include pre-school totlots, multi-use fields, baseball diamonds, rest rooms and storage buildings.

2) Waterfront Park: The Waterfront Park facilities shall include a pier, waterfront trail, multi-use fields, picnic areas and parking. Much of the park will be maintained in a natural condition reserved for passive recreation. The feasibility of building a public pier along the waterfront should be explored.

3) Community Park: Community parks include the Refugio Valley Park and the Waterfront Park. The Refugio Valley Park is more oriented towards active recreation, along with passive recreation and trails. The Waterfront Park is more oriented towards passive recreation with natural areas and the waterfront trail.

4) Mini Parks: Small parks that may include picnic tables, barbecue facilities, and child play areas.

5) Picnic Grounds: Picnic tables, benches and barbecue facilities will be located in scenic locations in the public open spaces and parks.

Program 1a.3 Bicycle and Hiking Trails

A comprehensive system of bicycle and hiking trails will connect open spaces and activity areas in the community and link with regional trails in Refugio Valley. The trail system will be separated from streets and highways where practical. The types of trails shown in the open space/conservation plan include:

- Regional riding trails
- Regional hiking trails, and
- Local trails

The regional riding trail would connect with the riding trail shown in the County Riding Trails Plan. This trail would penetrate the City at the easterly extremity of Refugio Valley, but would not continue through the City. The regional hiking trail corresponds to the proposed County Hiking Trail Plan and would follow Refugio Creek and the multi-use open space corridor to the Waterfront Park. It is proposed that, if feasible, this trail might continue southward to Pinole Creek looping back and connecting with the County trail in Pinole Creek. Other local paths may be either hiking trails, bicycle paths or both.

A paved trail that connects the Historic District with the Sycamore/San Pablo intersection needs to be preserved and maintained. As Lower Refugio Valley is developed, internal trails serving the new development should be required with linkages to the main paved trail.

Trails along the Rodeo Creek corridor shall be required with the development of Franklin Canyon and the sphere of influence.

Program 1a.4 School Athletic Fields

The Recreation Element provides that athletic facilities on the elementary and high school sites should be integrated into the recreational program for the community. Elementary school athletic courts and fields would adjoin City parks permitting joint use of facilities. The trail system connects school yards with public open spaces and residential areas.

Policy 1b (Park-1a:)

The City shall continue to work closely with the East Bay Regional Park District (EBRPD) in implementing the Shoreline Trail through Hercules.

Policy 1c (Park-1b:)

The City shall ensure that new development funds its share of costs associated with the provision of park facilities by attaching project-specific mitigation as conditions of approval.

Policy 1d (Park-1c:)

The City may consider development agreements that will provide additional community parks and recreation facilities, such as ballfields and other areas for organized recreation, in exchange for allowing development at greater than the "typical" FAR, as specified in the proposed Land Use Element Update.

Policy 1e

The City shall continue to honor the Briones Hills Agricultural Preservation Agreement that was adopted jointly with Lafayette, Martinez, Orinda, Pinole, Pleasant Hill, Richmond and Contra Costa County. The agreement protects a 64 square mile area from development through a joint policy of not annexing any land within the preservation area to urban service districts or cities.

WILDLIFE

OBJECTIVE 2

Preserve seasonal freshwater wetlands.

Policy 2a

The City shall require project proponents to design construction footprints to avoid any wetlands and buffer zones around the wetlands. If avoidance is not possible projects shall be redesigned so as to impact the least amount of wetlands. Any areas that are classified as wetlands and will be affected by project development shall be recreated either on or off site in accordance with CDFG and COE.

Program 2a.1

Prior to construction in areas of wetlands, the City shall support CDFG and Corps permitting process. A project sponsor shall be required to obtain a Streambed Alteration Agreement from CDFG and/or a Section 404 Corps permit prior to any development within any wetland.

Program 2a.2

If flood control improvements are required along Refugio Creek the City shall work with the Corps to create the flood control area wide enough to provide for establishment within the flood control area of native vegetation to provide for wildlife habitat. The City shall allow a transition area between proposed land uses and this natural community, as described in Program 13B of the proposed Land Use Element.

OBJECTIVE 3

Protect the Refugio Creek riparian corridor from encroaching development.

Policy 3a

Design of building footprints along any riparian corridors shall be outside the CDFG- and/or COE-pre-approved buffer zone. Sensitive riparian habitats shall be marked by a qualified biologist to deter any destruction by equipment during construction.

Program 3a.1

Prior to construction in areas of riparian corridors or wetlands, the City shall support CDFG and Corps permitting process. A Streambed Alteration Agreement from CDFG and/or a Section 404 Corps permit shall be obtained by the project applicant prior to any development within any creek or discharge of fill into any creek.

Program 3a.2

Development along any riparian corridor shall incorporate measures to avoid impacts during construction, including:

- i) Construction of any access bridge shall be limited to the bridge footprint area only.
- ii) Parking of large equipment shall be on the upland grassland area or on the paved street. Construction workers cars shall have designated parking areas.
- iii) Basins for oil leaks from the equipment shall be installed if equipment is parked on-site over night.

OBJECTIVE 4

Protect riparian and wetland communities from degradation through introduction of urban pollutants in stormwater runoff.

Policy 4a

The City shall require project proponents to design facilities to prevent degradation of riparian and wetland communities from urban pollutants in storm runoff.

Program 4a.1

To minimize pollution downstream from sedimentation, the City shall require installation of sedimentation and grease basins in the storm drain system in parking lots in accordance with NPDES regulations and shall require that property owners maintain the basins annually, or as required by NPDES regulations. Parking lots shall be swept periodically to decrease the amount of debris that could potentially contaminate the riparian or wetland habitat.

OBJECTIVE 5

Preserve salt marsh zones along San Pablo Bay.

Policy 5a

The city shall review development proposals for consistency with minimizing impacts to salt marsh zones. Buildings shall be located on existing developed or graded areas, where practicable.

Program 5a.1

The City shall work with CDFG, BCDC, East Bay Regional Park District, and the Corps to determine appropriate buffer zones along the Bay to protect tidal habitat when designing a bay access trail linkage between Pinole and Rodeo. Public access and pedestrian pathways shall be limited within the buffer zone, and when possible, located along the edges of the buffer zone. Bicycles shall be encouraged to stay on bike paths through the use of signage and fencing.

Program 5a.2

The City shall require developers to provide signage and fencing to enforce leash laws around remaining areas of sensitive habitats such as salt marsh wetlands and mud flats as conditions of approval.

OBJECTIVE 6

Protect native plant communities and habitats for special status plant and animal species.

Policy 6a

The City shall continue to utilize environmental review under CEQA to review development projects that not exempt from the California Environmental Quality Act for impacts on sensitive species and their habitat.

Policy 6b

The City shall require that development within the General Plan area incorporate features to preserve habitat for sensitive species.

Program 6b.1

Areas that could provide habitat for sensitive species shall be surveyed by qualified biologists provided by project sponsors prior to project design. Surveys in sensitive areas shall be conducted prior to any development. Sensitive areas within the study area includes eucalyptus groves, freshwater wetlands and adjacent trees, open grasslands, ponds and creeks, and buildings which are abandoned or slated for destruction. If any species is present, coordination with the CDFG will be required for mitigation of impacts and redesigning of the project footprint to avoid any sensitive species or sensitive habitat. If avoidance is unavailable coordination with the CDFG will be required for relocation of these species and for determining replacement of habitat.

Policy 6c

As much open space as possible within sites proposed for development shall be retained as informal open space for wildlife habitat, rather than as formal, landscaped parks or grounds. The City shall require that native plants from local area be used in landscaping, and in areas with a lower water table, native drought tolerant species shall be used in landscaping.

Program 6c.1

Development, subdivision and planned development plan applications shall be reviewed and conditioned to implement the following:

- i) Wildlife areas shall be revegetated with native or non-native grassland and native species of shrubs requiring no irrigation and little management beyond the first year after planting.
- ii) Wildlife habitat shall be consolidated into "preserves" that are as large as possible.
- iii) Habitats on adjoining parcels shall be as contiguous as possible, to create wildlife corridors.
- iv) Wildlife open space shall be placed adjacent to other wildlife habitat, to preserve the greatest ecological value.
- v) Public access to wildlife habitat shall be minimized by placing trails close to buildings so as to provide the largest area of habitat possible with the least amount of impact from the public.
- vi) Open space areas shall be designed into the footprint of proposed projects and shall be located adjacent to existing open space areas, providing a larger continuous area for wildlife to use.
- vii) Open space areas, if disturbed during construction, shall be landscaped with native species.
- viii) Trails, if any, shall be placed close to buildings so as not to disturb wildlife nesting/denning areas.

WATER SUPPLY

OBJECTIVE 7

Ensure an adequate water supply for the community.

Policy 7a

The City shall cooperate with East Bay Municipal Utility District planning efforts to help ensure an adequate water system for existing and future residents and to maintain adequate water reserves.

Policy 7b

The City shall implement programs of water conservation to make efficient use of its water supply

Program 7b.1

Ensure that the new development pays its share of the costs associated with the provision of facilities to conform to EBMUD requirements for water conservation by attaching project-specific mitigation requirements as conditions of approval.

Program 7b.2

The City will practice water conservation in management of parks and requirements for landscape design development

Policy 7c

Encourage effective water conservation practices by residents and businesses including household conservation and use of drought-resistant landscaping and reclaimed wastewater.

Program 7c.1

The City will encourage the installation of dual plumbing systems in large developments to accommodate future use of reclaimed wastewater for non-domestic purposes such as landscape irrigation, commercial and industrial process uses and toilet flushing in non-residential buildings. Dual systems may be installed at time of construction or later when reclaimed water becomes available.

Program 7c.2

The City shall require the installation of low-flush toilets and other low-flow plumbing fixtures for new residential and commercial development.

WATER QUALITY

OBJECTIVE 8

Adequate wastewater treatment capacity to serve the existing and future demands.

Policy 8a

The City shall initiate studies and programs to identify wastewater treatment requirements to meet existing and future demands, and implement effective funding mechanisms.

Program 8a.1

The City shall ensure that new development pays its share of the incremental capacity costs associated with the provision of wastewater treatment facilities by attaching project-specific mitigation as conditions of approval.

Program 8a.2

The City shall initiate a wastewater treatment study and shall implement programs to ensure adequate wastewater treatment capacity prior to approval of development that would generate demand for treatment in excess of capacity, including increased capacity improvements now planned. This study may include the following information:

- i) Inventory of existing facilities, including collection systems, treatment plants, and pumping stations. [This inventory has been accomplished as part of the planning for improvements described in the EIR Setting.]
- ii) An alternative analysis of the City's three options to treat additional wastewater expected at buildout of the proposed Land Use Element Update.
- iii) Identification of funding sources.
- iv) Coordination with the City of Pinole, EBMUD and other agencies involved in wastewater treatment and/or water reclamation.
- v) Appropriate uses of reclaimed water within the City.

Program 8a.3

The City shall implement a Capital Improvement Program (CIP) for the selected wastewater treatment alternative(s). The CIP shall include funding, scheduling and development programs for the selected alternative which shall meet RWQCB standards.

Program 8a.4

The City shall pursue implementation of wastewater treatment plant improvements to upgrade effluent treatment to a level that it can be reused as reclaimed water.

OBJECTIVE 9

Improve surface runoff water quality

Policy 9a

Develop a Master Water Quality Control Plan for the City, including measures to clean up existing contaminated water resources in various parcels, to identify and enforce the mitigation of existing sources of pollution, and to develop ways of preventing further pollution such as specific water treatment policies for industries and retention basins for surface runoff suspected of carrying roadway pollutants. (See policies and standards in the Growth Management Element)

Program 9a.1

The Master Water Quality Control Plan shall be prepared by the City to meet NPDES standards, be approved by the City Engineer, and reviewed by the Regional Water Quality Control Board and State Department of Water Resources for correctness and thoroughness, prior to implementation.

Program 9a.2

As part of the Master Water Quality Control Plan implementation, develop a set of best management practices (BMPs) for developers to follow. Such practices may include, but are not limited to:

- i) Use of stormwater retention or detention structures;
- ii) The use of oil and water separators; and
- iii) The use of sediment traps.

HYDROLOGY

OBJECTIVE 10

Reduce flooding potential within floodprone areas.

Policy 10a

Ensure that adequate drainage facilities and pollution prevention and control infrastructure are built accommodate the increase in runoff from newly developed areas.

Program 10a.1

The City shall review and refine, as necessary, its Master Drainage Plan, including specifics for drainage on individual parcels to be developed prior to approval of any development in the study area.

Program 10a.2

For each proposed development project, runoff increase calculations for the parcel at full build-out shall be measured against estimates of existing runoff to ensure that no flooding will result. (See also Growth Management Element standards for onsite retention and finished floor elevation requirements.

AIR QUALITY

OBJECTIVE 11

Improve air quality within the community

Policy 11a

Development within the City shall be conditioned to reduce air quality impacts during construction and subsequent operation.

Program 11a.1

Coordinate with the BAAQMD in planning future growth, implementing regional transportation plans and trip reduction measures, and controlling stationary source emissions. Incorporate the recommendations of the BAAQMD in General Plan policies and directing for regional growth and development.

Program 11b.1

Implement a dust abatement program for new development including the following dust control measures:

- i) Sprinkle all construction areas with water (recycled when possible) at least twice a day, during excavation and other ground-preparing operations, to reduce fugitive dust emissions. Wetting could reduce particulate (dust) emissions by up to 50 percent.
- ii) Cover stockpiles of sand, soil, and similar materials, or surround them with windbreaks. This measure will substantially reduce wind erosion of stockpiled materials during demolition, and construction, reducing the potential of the project to contribute to excessive suspended particulate (dust) concentrations when the wind exceeded 10 miles per hour.
- iii) Cover trucks hauling dirt and debris to reduce spillage onto paved surfaces.
- iv) Post signs that limit vehicle speeds on unpaved roads and over disturbed soils to 10 miles per hour during construction.
- v) Use canvas drapes to enclose building floors during the application of mineral-based fiber insulation to structural steel frames.
- vi) Sweep up dirt and debris spilled onto paved surfaces immediately to reduce re-suspension of particulate matter through vehicle movement over those surfaces.
- vii) Require the construction contractor to designate a person or persons to oversee the implementation of a comprehensive dust control program and to increase watering, as necessary.
- viii) Require construction contractors to maintain and operate construction equipment so as to minimize exhaust emissions. All internal combustion engines shall be kept well-tuned with regular and periodic inspection and maintenance checks to minimize exhaust emissions. During construction, trucks and equipment shall be running only when necessary.

Program 11b.1

Require that construction of large projects be timed to avoid significant periods of overlap.

HISTORIC AND PREHISTORIC RESOURCES

OBJECTIVE 12

Protect and preserve important historic and prehistoric resources

Policy 12a

Prehistoric resources shall be identified and preserved to the extent feasible. If previously unknown subsurface cultural resources are discovered during excavation activities on the identified parcels or elsewhere in the study area, excavation would be temporarily halted and an archaeologist consulted as to the importance of the resources. Should the archaeologist

determine that the resources are important, the project sponsor would follow the procedure described in Program 12a.2.

Program 12a.1

Prior to development on Parcels in archaeologically sensitive areas identified within the Land Use Plan EIR, an attempt shall be made through a combination of archival research and in-field testing to identify areas that may have been used by Native American populations. Areas containing prehistoric deposits will be mapped; evaluation of their significance will follow only in those areas where future development might affect the resources.

Program 12a.2

The City shall enact the following program prior to any development in the vicinity of prehistoric sites CA-CCO-370 and CA-CCO-248 as identified within the Land Use Plan EIR as Parcels 1 and I, respectively. The program will also apply to Parcels A, C, and 1-4, where the potential for Native American remains exists. The program shall be conducted under the guidance of Appendix K of the *CEQA Guidelines*.

- i) Prior to excavation and construction on the above parcels, the prime construction contractor and any subcontractor(s) will be cautioned on the legal and/or regulatory implications of knowingly destroying cultural resources or removing artifacts, human remains, bottles, and other cultural materials from the project site.
- ii) The project sponsor will identify a qualified archaeologist prior to any demolition, excavation, or construction. The City will approve the project sponsor's selection for a qualified archaeologist. The archaeologist will have the authority to temporarily halt excavation and construction activities in the immediate vicinity (ten-meter radius) of a find if significant or potentially significant cultural resources are exposed and/or adversely affected by construction operations.
- iii) Reasonable time would be allowed for the qualified archaeologist to notify the proper authorities for a more detailed inspection and examination of the exposed cultural resources. During this time, excavation and construction would not be allowed in the immediate vicinity of the find; however, those activities could continue in other areas of the project site.
- iv) If any find were determined to be significant by the qualified archaeologist, representatives of the project sponsor or construction contractor and the City, the qualified archaeologist, and a representative of the Native American community (if the discover is an aboriginal burial) would meet to determine the appropriate course of action.
- v) All cultural materials recovered as part of the monitoring program would be subject to scientific analysis, professional museum curation, and a report prepared according to current professional standards.

SCENIC RESOURCES

OBJECTIVE 13

Preserve and enhance scenic views within the community.

Policy 13a

Development proposals shall be reviewed in terms of natural objects in the vicinity that have aesthetic significance. This may include open space, eucalyptus groves, or vegetation that serves as a view corridor or has important visual attributes. Development proposals shall be sited to ensure that these features are retained or replaced to the extent feasible, resulting in minimal view impairment.

Policy 13b

Plantings that serve to screen views of residential development, or that help to maintain a natural-appearing landscape, shall be retained to the extent feasible. Such plants could be thinned selectively if thinning would improve view corridors. If specific trees are to be removed, such as eucalyptus trees, replace with trees, preferably native species, that will provide suitable screening while retaining important view corridors, especially along San Pablo Avenue which is a designated scenic corridor.

Policy 13c

Preserve the wooded tree-lined character of the proposed hiking/biking trail along Refugio Creek west of I-80 through retention of existing vegetation and/or planting of replacement trees and other vegetation.

Policy 13d

Development shall preserve important view corridors, where feasible, by identifying and preserving the attributes of the view corridor that characterize its significance (e.g. framing elements, surface water reflections, presence or absence of impinging details) as seen from roadways, pedestrian paths or other public vantage points to avoid view obstruction. Buildings shall be sited so as to minimize view obstruction from sensitive viewpoints.

Program 13d.1

The following views, from publicly accessible viewpoints, shall be preserved to the maximum extent feasible as the City evaluates new development on a parcel-specific basis as identified within the Land Use Plan EIR:

- i) Upper drainage views from higher elevations of Parcel 13 easterly up the floor of Franklin Canyon.

- ii) Lower drainage views from Hercules Point north across open water to Lone Tree Point and beyond to Solano and Napa Counties.
- iii) Lower drainage ridge views from the promontory of San Pablo Bay, Lone Tree Point, Franklin Canyon and the Refugio Creek floodplain.
- iv) San Pablo Avenue views of specimen oak tree stands and, where feasible, Eucalyptus.
- v) Views of San Pablo Bay and the Hills of Marin, Sonoma and Napa Counties, and inland of the Briones Hills, that are available from various elevation points on Parcels 2, 3, 4, 5, 6, 7, and C and from the shoreline areas of Parcels 1, 2, and 6.
- vi) Views from the former Hercules Powder Company offices on the promontory to the west, north and east.
- vii) Views of the upper elevations of the hills surrounding Highway 4.

Policy 13e

New development shall be designed to minimize light and glare impacts.

Program 13e.1

The City of Hercules shall evaluate the light and glare potential of new development on a parcel specific basis and apply the following measures:

- i. Screening of parking areas by using vegetation or trees. This will reduce the amount of glare generated from painted and chrome automobile surfaces and prevent expanses of stationary and moving automobiles.
- ii) Hooded lights for nighttime illumination should be used for parking areas, shipping and receiving docks and industrial development. Hooded lights direct the light beam towards the ground, which if a dark pavement, will not reflect light and cause spillage into neighboring uses.
- iii) Regular windows should be used instead of the glass walls or massive reflective windows often used for research and development, and office park developments.

C. STANDARDS

The standards for provision of parks and open space in Hercules are:

Neighborhood Parks:	A minimum of 1.75 acres of neighborhood parks shall be provided for each 1,000 residents.
Community Parks:	A minimum of 3.25 acres of community park space shall be provided for each 1,000 residents.
Open Space:	A minimum of 34 acres of open space (public and private combined) shall be provided for each 1,000 residents.

The existing and proposed open space resources identified in the General Plan include the following:

- Public open spaces (852 acres)
- Community parks (81 acres)

- Neighborhood and mini parks (44.5 acres)
- Schools (96.9 acres)
- Civic Center (15 acres)
- Arterial and Freeway rights-of-way (308 acres)
- Baylands (8,140 acres)

In addition, there will be private open space and recreation areas within residential neighborhoods. The most effective open space will be the public open space and developed city parks which will amount to a total of 852 acres. This is about 21% of the developable land in the City.

The proximity and availability of open space and conservation lands is of particular concern in neighborhood design. These lands help to define the shape and character of the landscape providing views and vistas and usable open space on a daily basis. A number of factors will be considered in the establishment of urban design standards in adopting the neighborhood plans for specific areas including:

- a. The relationship to city parks and public open space within the City.
- b. The proximity to the San Pablo Bay or permanent open spaces outside the City.
- c. The expected composition of the population (proportion of children or senior citizens).
- d. The type and configuration of housing units.
- e. Vehicular and pedestrian circulation.
- f. The amount, distribution and quality of proposed private open spaces and recreation areas.

The amount of lands designated in the General Plan for permanent open space and parks represent a high standard for California cities - about 34 acres per 1,000 population. The quality of the natural environment will depend to a large degree on the urban design standards built into Neighborhood Plans and the adequacy of City open space management programs.

D. IMPLEMENTATION

The implementation tools available for the open space/conservation element are in three major areas:

- Municipal programs requiring city funds,
- Community development requirements for private development, and
- Coordination with other agencies.

1. Municipal Programs

a. Open Space Management Program

The basis for a coordinated open space management program for plant materials and wildlife is contained in two reports prepared for the City. A comprehensive program should include the following:

- 1) Operation of an on-site nursery/tree farm,
- 2) Planting open space areas prior to development,
- 3) Developing a uniform street tree program, and
- 4) Encouraging the maintenance of wildlife populations by providing a diversity of habitats.

b. Resource Management Program

The following plans, related to water quality, hydrology and land resources, should be considered in conjunction with the open space/conservation element:

- 1) A wastewater management plan
- 2) A master drainage plan
- 3) A program for environmental evaluation of major public service facilities and rights-of-way

c. Capital Improvements Program

The capital improvements program is a five year program for municipal capital expenditures which enable the City to plan finances for more than one year at a time. The priorities of open space and conservation needs will be evaluated and ranked against other community needs in the Capital Improvements Program.

Each year the City must allocate funds required for the operation, maintenance and capital expenditures in connection with the open space/conservation element. It is essential that open space/conservation programs are realistically planned in terms of other priorities in the community and the City's financial resources.

2. Community Development Requirements

Consideration of open space and conservation goals will be an integral part of the community planning and design process.

a. General Plan and Zoning Proposals

All General Plan and zoning proposals will be reviewed in terms of the goals and proposals established in this element. Those areas where there is a potential effect on open space and conservation will receive special attention in subsequent planning and design reviews.

b. Neighborhood Plans

Proposed neighborhood plans will be reviewed in terms of opportunities for conserving and enhancing the natural environment and creating development that is compatible with the open space system.

c. Tentative Maps and Planned Developments

Tentative maps and Planned Development Plans will incorporate urban design techniques to take advantage of the existing environmental qualities of sites being developed within the City.

d. Subdivision and Grading Ordinances

The City's proposed subdivision and grading ordinances contain specific provisions establishing minimum standards for the development of land in the City. These regulations, effectively administered, can minimize temporary or permanent environmental damage due to land development to insure that development is compatible with the open space/conservation goals.

The grading ordinance will assist in implementing the goals of this element by specifically requiring:

- 1) Stockpiling and replacement of the soil mantle.
- 2) The re-establishment of vegetative cover.
- 3) Slopes to be blended, to the extent practical, into the existing terrain.
- 4) A thorough soils investigation of all grading and development proposals, and continuous supervision of all grading operations.
- 5) Installation of adequate temporary and permanent drainage provisions.

3. Coordination with Other Agencies

The City should work with the City of Pinole and Contra Costa County in coordinating plans for open space and conservation. The City should also explore opportunities for State and Federal funds which may be applied to open space purposes.

The City should work with the school district toward joint use of recreational facilities provided in municipal parks and on school property. To this end, the Hercules General Plan shows proposed elementary school sites adjoining city parks. The joint planning construction and operation of these facilities can increase the total amount of open space lands available to future residents for recreational purposes.

The City might also coordinate with the school district regarding landscaping and maintenance of their sites.

The City should consult with the several public and semi-public agencies who have rights-of-way within the City. With proper planning, these lands can be a resource for providing future landscaped open space. Conversely, poorly maintained rights-of-way can be an environmental negative in a community. Some of the trails shown on the open space/conservation plan are within various rights-of-way.

SAFETY ELEMENT

**APPROVED BY THE CITY COUNCIL
SEPTEMBER 22, 1998**

VI. SAFETY ELEMENT

I. INTRODUCTION

A. PURPOSE

The Safety Element is the primary document for linking land use decisions to local safety planning. The main focus of the element is to address the public safety concerns of the community. One of its ultimate purposes is to reduce harm to people and property resulting from natural hazards such as fire, flooding, geologic and seismic hazards. Safety issues outside of natural hazards may also be addressed.

The Safety Element addresses public safety through analysis of conditions and hazards that have the potential to cause loss of life, injury, property damage, economic loss, and social dislocation. For Hercules, these constraints include seismic and other geologic hazards, flooding, urban and wildland fires, and hazardous materials. (Hazardous materials are addressed in the Hazardous Waste Management Plan Element.) The city cannot be made hazard free, but the planning process can be used to minimize exposure to dangerous conditions. This is the concept of acceptable risk and it is an inherent part of the environmental planning process.

Every community must decide what public safety standards are acceptable and the actions needed to maintain those standards. For planning purposes, an acceptable level of risk is one at which a hazard is deemed to be a tolerable exposure to danger, given the expected benefits to be gained. For some types of risk, numerical measures have been defined to identify the threshold of acceptable risk. In the case of seismic or flooding hazards, for example, specific locations may be identified as unacceptable based on their distance from known faults or location within a designated flood zone.

Environmental impact review is frequently used to assist in the decision-making process. Each identifiable risk must be addressed with mitigation measures that eliminate or minimize potential hazards. The measures include limitation of use in locations which are prone to hazard, special construction techniques, and site planning programs to respond to hazardous conditions.

B. AUTHORITY

1. Safety

Government Code Section 65302: (g) A safety element for the protection of the community from any unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence, liquefaction and other seismic hazards identified pursuant to Chapter 7.8 (commencing with Section 2690) of the Public Resources Code, and other geologic hazards known to the legislative body; flooding; wild land fires, and urban fires. The safety element shall include mapping of known seismic and other geologic hazards. It shall also address evacuation routes, peakload water supply requirements, and minimum road widths and clearances around structures,

as those items relate to identified fire and geologic hazards. Prior to the periodic review of its general plan and prior to preparing or revising its safety element, each city and county shall consult the Division of Mines and Geology of the Department of Conservation and the Office of Emergency Services for the purpose of including information known by and available to the department and the office required by this subdivision.

To the extent that a county's safety element is sufficiently detailed and contains appropriate policies and programs for adoption by a city, a city may adopt that portion of the county's safety element that pertains to the city's planning area in satisfaction of the requirement imposed by this subdivision.

At least 45 days prior to adoption or amendment of the safety element, each county and city shall submit to the Division of Mines and Geology of the Department of Conservation one copy of a draft of the safety element or amendment and any technical studies used for developing the safety element. The division may review drafts submitted to it to determine whether they incorporate known seismic and other geologic hazard information, and report its findings to the planning agency within 30 days of receipt of the draft of the safety element or amendment pursuant to this subdivision. The legislative body shall consider the division's findings prior to final adoption of the safety element or amendment unless the division's findings are not available within the above prescribed time limits or unless the division has indicated to the city or county that the division will not review the safety element. If the division's findings are not available within those prescribed time limits, the legislative body may take the division's findings into consideration at the time it considers future amendments to the safety element. Each county and city shall provide the division with a copy of its adopted safety element or amendments. The division may review adopted safety elements or amendments and report its findings. All findings made by the division shall be advisory to the planning agency and legislative body.

2. Seismic Safety

Public Resources Code Sections 2697 and 2699 require that seismic safety be addressed in the General Plan and through geotechnical reports.

Public Resources Code Section 2697:

(a) Cities and counties shall require, prior to the approval of a project located in a seismic hazard zone, a geotechnical report defining and delineating any seismic hazard. If the city or county finds that no undue hazard of this kind exists, based on information resulting from studies conducted on sites in the immediate vicinity of the project and of similar soil composition to the project site, the geotechnical report may be waived. After a report has been approved or a waiver granted, subsequent geotechnical reports shall not be required, provided that new geologic datum, or data, warranting further investigation is not recorded. Each city and county shall submit one copy of each approved geotechnical report, including the mitigation measures, if any, that are to be taken, to the State Geologist within 30 days of its approval of the report.

(b) In meeting the requirements of this section, cities and counties shall consider the policies and criteria established pursuant to this chapter. If a project's approval is not in accordance with the

policies and criteria, the city or county shall explain the reasons for the differences in writing to the State Geologist, within 30 days of the project's approval.

Public Resources Code Section 2699:

Each city and county, in preparing the safety element to its general plan pursuant to subdivision (g) of Section 65302 of the Government Code, and in adopting or revising land use planning and permitting ordinances, shall take into account the information provided in available seismic hazard maps.

II. EXISTING CONDITIONS AND HAZARDS

A. GEOLOGY

Regional geology in the City of Hercules consists of alluvial (stream-related) deposits of Quaternary age (less than two million years old) on the floor of the Refugio Valley, surrounded by marine sedimentary rocks of Miocene age (between five and 23 million years old) in the adjacent uplands. The bedrock units exposed on the hills above the valley floor consist of Rodeo Shale and Hambre Sandstone to the south, and Briones Sandstone and Cierbo Sandstone to the north. In many places, the bedrock is overlain by colluvium (loose soil and rock fragments that have moved downslope).

Alluvium in the Refugio Valley varies from about 12 feet in thickness in the southeast portion of the valley to about 80 feet in thickness near the valley floor. Near San Pablo Bay, a few feet of fine-grained flood plain alluvium cap weak and highly compressible bay mud deposits. The bay mud has an estimated thickness of 35 to 40 feet along the western edge of the valley, thinning out in an upvalley direction.

Much of the older valley floor deposits are covered by loose, artificial fill. Fill materials were placed during operation of the Hercules Powder Company, and consist of soils and bedrock excavated from adjacent hillside areas; in some places the fill includes rubble consisting of bricks, asphalt, concrete, glass, and wood.

Most of Hercules lies within the lower portion of the Refugio Valley, adjacent to San Pablo Bay. The valley floor is fairly level. Most slopes on the uplands surrounding the valley floor are fairly gentle (less than 15 percent), although some slopes are between 15 and 30 percent, and exceed 30 percent in very limited areas. Landslides and soil creep have occurred in the past in the steeper portions of areas with unstable soils.

Clear Lake Clay lies on top of the alluvial deposits on the valley floor. The clay is a poorly drained soil with low erosion potential, low strength, high shrink-swell potential, and high corrosivity. Soils in the upland areas primarily consist of Tierra Loam, a moderately-well drained soil with moderate to high erosion potential, low strength, high shrink-swell potential and high corrosivity. Other soils in the upland areas consist of Los Osos Clay Loam and Sehorn Clay, both of which are well-drained soils with moderate to high erosion potential, low strength, high shrinkswell potential, and high corrosivity.

B. SEISMIC HAZARDS

On the basis of past history, all of the San Francisco Bay Area is considered seismically active. There is no method by which the location, magnitude or time of future seismic occurrences can be predicted. However, it is possible to identify certain types of seismic hazards and foretell which areas of the City will be particularly subject to damage by earthquakes. The following discussion summarizes the potential damaging effects of earthquakes in the City including ground shaking, ground failure, surface ruptures and tsunamis.

1. Faults

The Hercules area, as part of the San Francisco Bay Area, is in one of the most seismically active regions in the United States. The study area could be affected by ground shaking due to movement along any one of a number of active faults in the region. The San Andreas Fault lies about 21 miles to the southwest of the City, the Hayward Fault lies about two and a half miles southwest of the city, and the Concord-Green Valley Fault lies about 11 miles to the east. The Calaveras Fault lies approximately 40 miles to the southeast. The Rodgers Creek Fault, which connects with the Hayward Fault beneath San Pablo Bay, is another major fault only about 10 miles away to the west. The area within Hercules would be subject to strong ground motion in the event of a moderate to severe earthquake in the Bay Area. The U.S. Geological Survey has estimated that there is a 67 percent probability that there will be one or more earthquakes of magnitude 7.0 or greater (comparable to the 1989 Loma Prieta earthquake) in the Bay Area in the next 30 years. Ground shaking, rather than surface fault rupture, is the cause of the most damage during earthquakes.

In addition to the active faults noted above, two inactive faults are located in the Hercules vicinity. Two traces of the Pinole Fault pass immediately southwest of Hercules and the Franklin Fault lies about three miles to the northeast. Neither of these two faults shows evidence of surface displacement in Quaternary time (the last two million years), and future movement along them is much more unlikely than along the active faults associated with the Pinole fault.

The Alquist-Priolo Special Studies Zones Act requires the state to identify zones around "active" faults (those having evidence of surface displacement within about the last 11,000 years) in order to manage development near possible surface rupture sites. There are no Special Studies Zones within Hercules (the closest Special Studies Zone is along the Hayward Fault, about two and one half to four miles to the southwest). The northern end of the Pinole Fault was originally included in a Special Studies Zone, but was removed from the active category after further analysis.

2. Earthquake Hazards

There are four major hazards associated with earthquakes. These are fault surface rupture, ground shaking, ground failure, and flooding due to earthquake-generated waves or dam failures.

Fault Surface Rupture. In major earthquakes, fault displacement can cause rupture along the surface trace of the fault, leading to severe damage to any structures or other improvements located on the fault trace.

Ground Shaking. Because it affects a much broader area, ground shaking, rather than fault surface rupture, is the cause of the most damage during earthquakes. Three major factors affect the severity (intensity) of ground shaking at a site in an earthquake: the size (magnitude) of the earthquake, the distance to the fault that generated the earthquake, and the geologic materials that underlie the site. Larger magnitude earthquakes cause the ground to shake harder and longer, and affect larger areas. Given similar subsurface conditions, the intensity of ground shaking decreases with distance from the causative fault. Thick, loose soils, such as uncompacted alluvium and artificial fill, tend to amplify and prolong the ground shaking, while bedrock is less susceptible to ground shaking.

The Association of Bay Area Governments (ABAG) has mapped portions of the City area's susceptibility to ground shaking as "extremely high" (the highest rating). These areas generally coincide with the bay mud underlying a portion of the valley floor and the bayfront. This map is on file at the City offices. The bay muds are generally located along the bay shore with larger extending inland from the bay at the mouths of creeks. The risk of ground shaking damage in the areas underlain by bay mud is rated as "extremely high" (6.1 percent expected damage and above) for tilt-up concrete buildings, "high" (4.1-5.0 percent damage) for concrete and steel buildings, and "moderate" (2.1-3.0 percent damage) to "moderately high" (3 -4 percent damage) for wood frame dwellings (ABAG, 1987). The risk of ground shaking damage is much lower for areas not underlain by bay mud, although areas underlain largely by alluvium are expected to endure strong ground shaking as well. See Figure 1.

Ground Failure. Earthquakes can cause secondary ground failures, such as landslides, liquefaction, lurch, and settlement. All of these involve a displacement of the ground surface due to loss of strength, failure, or compaction of the underlying materials due to ground shaking. An earthquake could trigger landslides, particularly upon steeper slopes where slide activity has already occurred. The amount of sliding would be intensified if an earthquake were to occur during wet winter months when the slopes were in a saturated, weakened condition.

Liquefaction is the sudden loss of strength in loose, saturated materials (predominantly sands) during an earthquake, which results in the temporary fluid-like behavior of those materials (much like quicksand). Liquefaction typically occurs in areas where groundwater is shallow, and materials consist of clean, poorly consolidated, fine sands. The upland areas surrounding the valley floor are underlain by bedrock and would not be subject to liquefaction. Bay mud underlying the western portion of the valley floor is not likely to liquefy, although sand seams occasionally contained within the bay mud or fine-grained alluvium or artificial fill on top of the bay mud could be susceptible to liquefaction. The liquefaction potential in the area of the rest of the valley floor generally is not known, although there is no indication that materials susceptible to liquefaction are present.

Lurch, or lurch cracking, is the cracking of the ground surface in soft, saturated material as a result of earthquake-induced ground shaking. Lurch cracking is likely to occur in areas of bay mud and fill in moderate to large earthquakes. Lurch cracking can occur in water-saturated sediments, soils, and alluvium at distances of up to 75 miles from the earthquake epicenter. The probability of lurching in the valley floor areas is unknown, but its occurrence is possible.

Differential settlement (where adjoining areas settle different amounts) most commonly occurs in loose, uncompacted materials of variable density and strength. Artificial fills are likely to be most susceptible to differential settlement. Transition areas between bedrock and alluvial deposits would also be subject to differential settlement.

Earthquake-Induced Inundation. Seismic activity off the coast of California could induce a tsunami, commonly but incorrectly referred to as a "tidal wave," that could enter San Francisco Bay through the Golden Gate. Tsunamis are waves that increase in size with distance traveled, and can cause destruction when they pile up at shallow shoreline areas. There is no evidence that any portion of Contra Costa County that is exposed to potential tsunami inundation has experienced significant damage from this phenomenon, and the likelihood of damage to the City of Hercules from one is small.

A major earthquake could theoretically create a seiche, a type of oscillating wave that sloshes around in an enclosed basin and can cause severe damage at the shoreline. No such wave has ever been recorded in San Francisco Bay or San Pablo Bay within historic time, however. A large earthquake could induce a landslide adjacent to a nearby reservoir, creating the geologic hazard known as landslide splash, an overtopping of water resulting from earth sliding into the reservoir. Additionally, failure of reservoir dams themselves could directly result from a major earthquake. However, the City of Hercules does not lie in the path of inundation from any reservoirs.

C. GEOLOGICAL HAZARDS

Potential geological hazards in the City include:

- a. Landslides and soil creep
- b. Valley Alluvium
- c. Existing fills
- d. Ground water, seepage and ponding
- e. Erosion

The City has recently adopted a Grading Ordinance establishing standards for grading operations, requiring the issuance of grading permits, providing for the approval of grading plans, and inspection of grading construction. The Grading Ordinance provides for testing where there are potential geologic hazards.

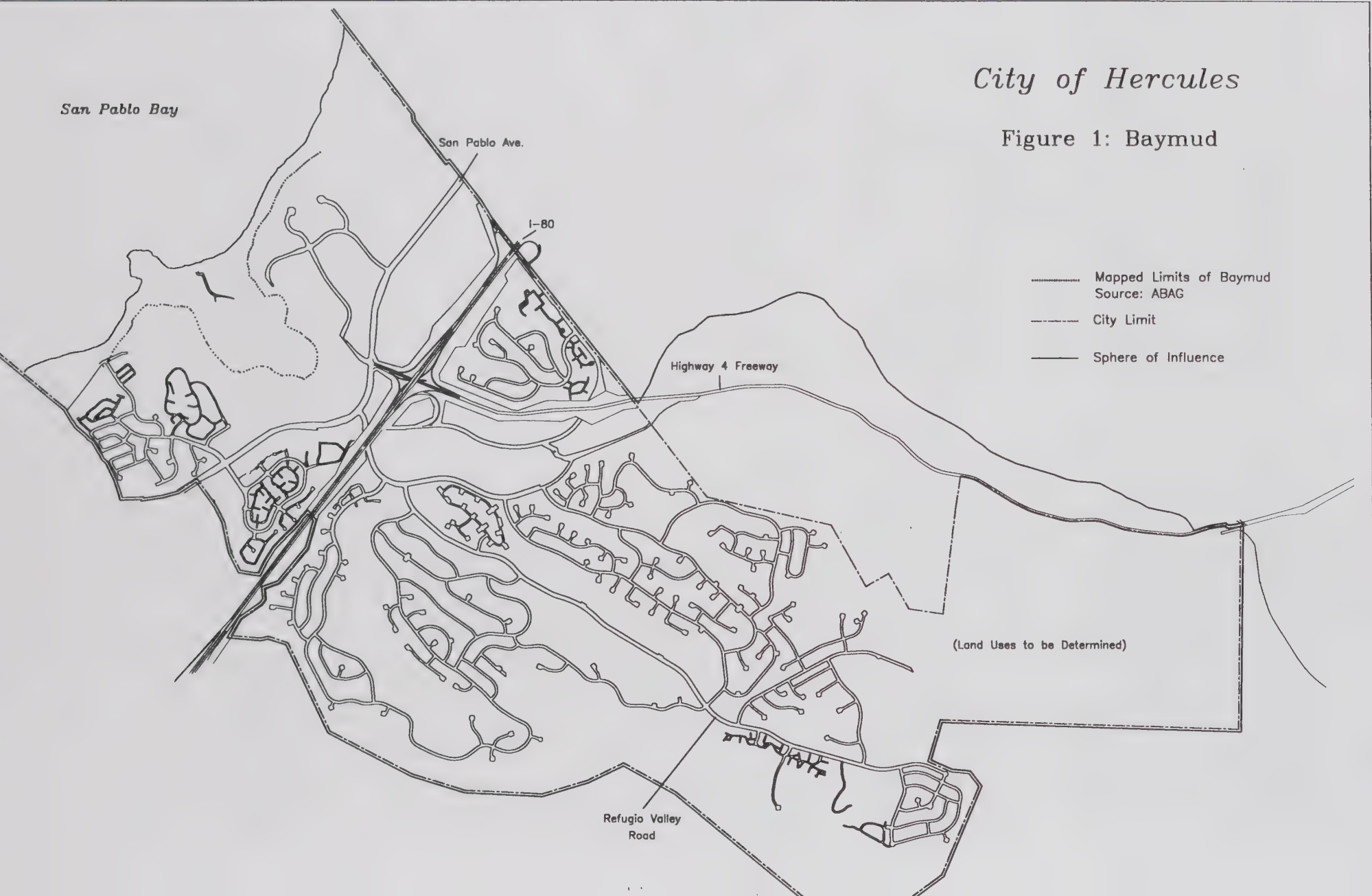
1. Landslides and Soil Creep

Numerous shallow landslides of various sizes are present, particularly in the southeastern part of the City.

In addition to the landslides, soil creep movements are occurring on certain slopes within the City. Creep movement is generally most active and widespread on the steeper slopes. Rates and depths of creep movement are much slower and shallower than those associated with active landslides.

City of Hercules

Figure 1: Baymud



2. Valley Alluvium

The depth of alluvium in Refugio Valley varies from 11.5 feet in the southeast portion of the valley to about 80 feet near the valley mouth. Most of the upper valley is blanketed with an expansive, adobe-type soil. The adobe-like topsoil is generally underlain to the bedrock formation with firm to still alluvial soils. However, in some locations, compressible fresh water marsh deposits are present, which become thicker and closer to the ground surface in the lower portions of Refugio Valley. Near the mouth of Refugio Valley, in the vicinity of the site of the former Hercules Incorporated dynamite plant, very weak and compressible younger bay muds are present. The depth of the younger bay muds near the valley mouth ranges from about 45 feet to about 70 feet. Older bay muds and/or residential soils of variable depths underlie the younger bay muds.

3. Existing Fills

Overlying the valley alluvium and some overburden soil deposits are several generally small and shallow embankment fills. Most of these fills are in Refugio Valley and vary in depth from the few feet up to ten feet. One large fill, in the Lower Refugio Valley, consists of approximately 100,000 cubic yards and averages about four feet in depth.

4. Ground Water, Seepage and Ponding

A generally shallow, thin zone of ground water will be encountered in most of Refugio Valley at depths ranging between three and five feet. Somewhat deeper ground water levels exist in the upper portions of the valley. Shallow ground water levels are also expected adjacent to Pinole and Rodeo Creeks. Several small springs and areas of surface seepage are present in the City, usually located in the foot or toe areas of landslides or at the base of sharp breaks in slope. During the wet winter months, numerous, generally small areas of water ponding are observed throughout the confines of Refugio Valley. Most ponds were the result of site grading for plant facilities over the years.

5. Erosion

Unprotected soils and highly weathered bedrock will be subject to erosion. Protective measures are especially needed for construction on highly erosive soils (Tierra Loam, Los Osos Clay Loam, and Sehon Clay).

D. FIRE HAZARDS

The major fire hazard areas within Hercules are the open space areas. The open spaces include brush and grass covered hills and forested areas. The blue gum Eucalyptus trees are particularly flammable. As the City grows and develops with more open spaces, the potential for wildland fires will increase.

1. Fire Service

Fire protection services to the City of Hercules are provided by the Rodeo-Hercules Fire Protection District. The District provides 24-hour protection to the City of Hercules and the unincorporated areas of Rodeo. A 24-hour dispatch service is provided to the District under contract with the City of Pinole. The District has an automatic response agreement with the Pinole Fire Department.

The District has two fire stations; a four-bay station at 326 Third Street in Rodeo and a three-bay station at 1680 Refugio Valley Road in Hercules. District equipment includes: one 1500-gpm pumper, one 1,250-gpm pumper, two 1,000-gpm pumpers, two 500-gpm Wildland units, two 200-gpm Wildland units, one rescue truck, one utility truck and four staff vehicles.

The District responds to all fire and rescue-related emergencies within the District's boundaries. In 1992. The response time goal of the District is to reach an emergency scene in built-up areas of the District within five minutes 90 percent of the time.

The District receives revenue from property taxes, fire impact fees levied on new development (developer fees), and benefit assessment fees levied pursuant to a District ordinance. Assessment fees are recurring annual fees collected according to a sliding scale based on risk factors according to the land use on the parcel. All parcels are assigned risk units based on the size and type of development; the number of risk units is multiplied by the unit fee to determine the assessment fee. The benefit assessment fees are used by the District for the purchase of new and replacement equipment and to support personnel costs.

Fire impact fees are levied on all new development within the District, both in the City of Hercules and in the unincorporated community of Rodeo. The total square footage of a project, whether industrial, commercial or residential, is multiplied by the fire impact fee rate to arrive at the total fee. Impact fees are used for the purpose of buying new and replacement capital equipment required to meet the demand that new development places on the District's fire suppression capabilities. Development fees may not be used to fund ongoing operations.

The District implements the weed abatement program within Hercules by clearing vegetation on undeveloped land for 40 feet from fencelines with developed areas. The weed abatement is scheduled to be completed prior to the July 4th weekend.

Peakload water supply requirements: The domestic water supply for Hercules is provided by the East Bay Municipal Utility District (EBMUD). EBMUD has several reservoirs within the Bay Area to serve its distribution network. In the event of an emergency, the District is dependent upon the EBMUD system to supply water. The District has a standard for emergency water supply for firefighting of 1000 gpm for residential uses and 1500 gpm for commercial uses.

The District uses a variety of criteria to determine the service impacts associated with new development. The criteria include:

- Size of structure(s), fire flow demands;
- Classification of occupancy (Hazard type);
- Type of building construction and materials;
- Daytime population density;
- Increase in calls for service;
- Code enforcement issues;
- Fire protection features (automatic sprinkler system); and
- Travel time and distance from nearest fire station.

E. LAND USE AND CIRCULATION

The Land Use and Circulation Elements were reviewed in terms of safety considerations. The Circulation Plan provides a framework of arterials and local streets that will provide alternate routes to or from any portion of the City in case of emergency. Long cul-de-sacs present safety problems because of the possibility of blockage preventing access of emergency equipment or evacuation of residents. The current maximum cul-de-sac length allowed by the Rodeo Hercules Fire District is 450 feet.

The blockage of Interstate 80 within the City would have a major impact on the circulation system. The only alternate route for traffic would be San Pablo Avenue. Willow Avenue would be the alternate route in the case of a blockage on Highway 4 freeway.

The Emergency Operations Plan of the City designates primary and secondary evacuation routes along with emergency equipment routes and shelters. The primary emergency equipment and evacuation routes are San Pablo Avenue, Highway 4 freeway, I-80 Freeway, Sycamore Ave., Refugio Valley Road, Falcon Way, Turquoise Ave., and Pheasant Drive. The minimum emergency road width clearance to be maintained along the evacuation routes is 20 feet. The clearance widths exclude parking and other impediments to traffic flow.

Approved Red Cross emergency shelters are designated within the Community Center at 2001 Refugio Valley Road, Ohlone Community Center at 1616 Pheasant Drive, Hercules School at 1919 Lupine Road, and Lupine Child Care Center at 1905 Lupine Road.

F. FLOOD HAZARDS

Potential causes of flooding in the City include:

- High tides and storm waves
- Creek overflows
- Standing water from excess rainfall

1. High Tides and Storm Waves

The City's northwest land area is adjacent to San Pablo Bay. Pinole Creek, between San Pablo Avenue and the Bay is a tidal waterway which has been improved and realigned by the Corps of

Engineers. A large portion of Refugio Creek has not been improved, thus remaining susceptible to flooding. High tides and storm-driven waves occurring together could overtop embankments and flood low-lying coastal areas.

2. Creek Overflows

When the surface runoff exceeds the capacity of the creek channel to carry the flow, creek overflows result. Pinole and Rodeo Creeks drain relatively small portions of the City while the drainage basin of Refugio Creek covers most of the City and extends well beyond the City boundary to the east. Pinole and Rodeo Creeks are adjacent to the northern and southern City boundaries and drain the neighboring communities of Pinole and Rodeo.

The lower channel of Refugio Creek is inadequate with a history of overflowing. The upper channel is on a slumping of slide slopes. Areas of 100-year flooding can be seen in Figure 2. For specific elevations of flooding, please see the Flood Insurance Rate map (Community Panel Number 060434 0008 B and 060434 0009 B) on file with the City of Hercules.

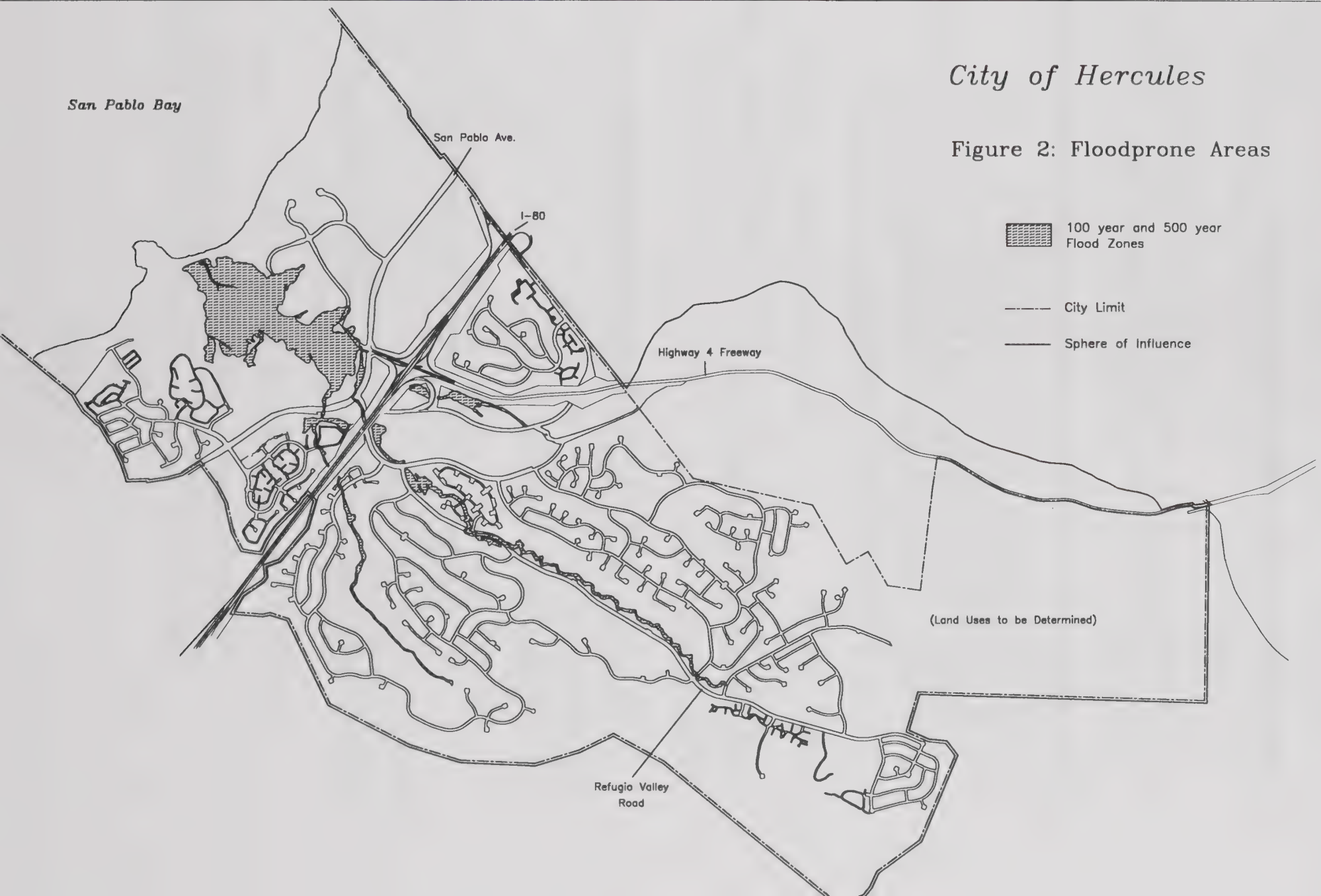
3. Standing Water from Excess Rainfall

Standing water from excess rainfall could occur in low-lying and level areas if the natural drainage channels were interrupted or modified by grading or impervious soils prevented the rapid infiltration of rainfall into the ground. Protection and improvement of drainage channels should be provided.

San Pablo Bay

City of Hercules

Figure 2: Floodprone Areas



III. SAFETY GOALS, OBJECTIVES, AND POLICIES

A. GOALS

The basic goal of the Safety Element is to reduce loss of life, injuries, damage to property and economic and social dislocations resulting from seismic, geological, flood and fire hazards. Subgoals are to:

1. Identify hazards and minimize exposure to hazards from either natural or human-related causes.
2. Establish adequate design and safety standards to reduce risks.
3. Incorporate safety considerations into the planning process
4. Provide adequate fire protection throughout the city.
5. Anticipate the potential for disasters; maintain continuity of life-support functions during an emergency; and maximize efforts for post-emergency recovery.

B. OBJECTIVES, POLICIES AND PROGRAMS

OBJECTIVE 1

Consider potential seismic, geologic, flood and fire hazards and introduce adequate safety measures in development plans and proposals.

Policy 1A

Seismic, geologic, flood and fire safety policies will be integrated into other mandatory elements of the General Plan. Administration and enforcement of municipal regulations provide positive measures for implementing safety policies.

Program 1A.1 Planning Review

1. Planned development plans must be prepared and adopted for all new development projects. Safety measures will be incorporated into these planned development plans to provide adequate protection from seismic, geologic, flood and fire hazards.
2. The review and approval of zoning applications, tentative maps and planned development plans shall include consideration of safety policies and standards contained in the General Plan and other area plans .

Program 1A.2 Subdivision, Zoning and Grading Regulations

1. The subdivision, zoning and grading regulations govern the subdivision of land, and the design and construction of site improvements. Minimum road widths and clearances around structures for emergency access shall be specified. Seismic,

geologic, flood and fire hazards shall be considered in the review and approval of tract maps, grading and improvement plans.

Program 1A.3 Building and Fire Codes

The City Council has adopted the Uniform Building Code and the Uniform Fire Code. Fire zones have also been designated in the City.

1. The Uniform Building Code provides minimum safety standards by regulating the design, construction, materials use and occupancy of buildings and structures within the City.
2. The Fire Code governs the maintenance of buildings by regulating the storage and handling of dangerous materials and by requiring adequate egress facilities .
3. Fire Zones limit the potential fire size, thereby preventing major conflagrations. All commercially zoned land in the City is designated Fire Zone 2 and the remainder is in Fire Zone 3 . Fire Zone restrictions involve building construction and the division of large building areas by fire walls.

Program 1A.4 Emergency Operations Plan

An Emergency Operations Plan has been prepared and should be maintained to provide responsibilities and procedures in the event of a major disaster or emergency in the City. This plan is compatible with the State of California and the Office of Emergency Services. The Emergency Operations Plan designates emergency evacuation routes.

Program 1A.5 Capital Improvements Plan

The Capital Improvements Program is a five-year program for municipal capital expenditures which is evaluated annually. Capital improvements which promote safety in the City, such as a fire station, will be evaluated and ranked with the other needs in the community .

Program 1A.6 Geologic and Seismic Hazard Mapping Update.

The geologic and seismic hazard maps relating to the Safety Element of the General Plan shall be updated and incorporated through amendment of the Safety Element. If hazards are discovered that are not currently addressed, the Safety Element shall be revised and amended to include policies and programs related to these hazards.

OBJECTIVE 2

Minimize exposure of public facilities and development to seismic hazards.

NOISE ELEMENT

**APPROVED BY THE CITY COUNCIL
SEPTEMBER 22, 1998**

NOISE

NOISE ELEMENT

Purpose and Authority

Government Code Section 65303(f) requires a noise element of all city and county general plans, as follows:

"A noise element which shall identify and appraise problems in the community. The noise element shall recognize the guidelines adopted by the Office of Noise Control in the State Department of Health Services and shall analyze and quantify, to the extent practicable, as determined by the legislative body, current and projected noise levels for all of the following sources:"

"... noise exposure contours for both near and long-term levels of growth and traffic activity, such noise exposure information shall become a guideline for use in development of the land use element to achieve noise compatible land use and also to provide baseline levels and noise source identification for local noise ordinance enforcement."

A noise element is required as part of the General Plan. The element analyzes and quantifies, to the extent practicable, current and projected noise levels in the community. Information provided by noise exposure contours for both near and long-term levels of growth and traffic activity become a guideline for use in development of the land use element to achieve noise compatible land use. The noise exposure contours also provide baseline noise levels and noise source identification for local noise ordinance enforcement. The noise element includes policies that address existing and foreseeable noise problems. The adopted noise element serves as a guideline for compliance with the state's noise insulation standards.

Noise sources in Hercules considered in this noise element include traffic (on freeways, highways, and major local roadways), railroad operations (both the Union Pacific and Atchison-Topeka and Santa Fe railroads), and local industrial plants. The noise exposure information is presented in terms of noise contours expressed in day/night noise levels or L_{dn} . The L_{dn} means the average equivalent A-weighted sound level during a typical 24-hour day, which includes the addition of 10 decibels to sound levels during the period 10:00 p.m. to 7:00 a.m. to account for the greater sensitivity to noise during late night and early morning hours.

Fundamentals of Noise

Noise Units

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its *pitch* or its loudness. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A *decibel (dB)* is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of ten decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10-decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 1.

There are several methods of characterizing sound. The most common in California is the *A weighted sound level or dBA*. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 2. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called L_{eq} . The most common averaging period is one hour.

Term	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted.
L_{01} , L_{10} , L_{50} , L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels in the night between 10:00 pm and 7:00 am.
Day/Night Noise Level, L_{dn}	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
L_{max} , L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Definitions of Acoustical Terms

Table 1

Source: ILLINGWORTH & RODKIN, INC./Acoustics • Air Quality

At a Given Distance From Noise Source	A-Weighted Sound Level in Decibels	Noise Environments	Subjective Impression
	140		
Civil Defense Siren (100')	130		
Jet Takeoff (200')	120		Pain Threshold
	110	Rock Music Concert	
Diesel Pile Driver (100')	100		Very Loud
	90	Boiler Room Printing Press Plant	
Freight Cars (50')	80		
Pneumatic Drill (50')	80		
Freeway (100')	70	In Kitchen With Garbage Disposal Running	Moderately Loud
Vacuum Cleaner (10')	70		
	60	Data Processing Center	
Light Traffic (100')	50	Department Store	
Large Transformer (200')	40	Private Business Office	Quiet
	40		
Soft Whisper (5')	30	Quiet Bedroom	
	20	Recording Studio	
	10		Threshold of Hearing
	0		

**Typical Sound Levels Measured in the
Environment and Industry**

Table 2

Source: ILLINGWORTH & RODKIN, INC./Acoustics • Air Quality

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA. The accuracy of the model decreases with increased distance from the source.

Since the sensitivity to noise increases during the evening and at night--because excessive noise interferes with the ability to sleep--24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Community Noise Equivalent Level*, *CNEL*, is a measure of the cumulative noise exposure in a community, with a five dB penalty added to evening (7:00 pm - 10:00 pm) and a 10 dBA addition to nocturnal (10:00 pm - 7:00 am) noise levels. The *Day-Night Average Sound Level*, L_{dn} is essentially the same as *CNEL*, with the exception that the penalty added to the evening time period is dropped and all occurrences during this three-hour period are grouped into the day-time period. The L_{dn} descriptor is the most common community noise descriptor, where the *CNEL* is most often used to describe aircraft noise.

Effects of Noise

Hearing Loss. While physical damage to the ear from an intense noise impulse is rare, a degradation of auditory acuity can occur even within a community noise environment. Hearing loss occurs mainly due to chronic exposure to excessive noise, but may be due to a single event such as an explosion. Natural hearing loss associated with aging may also be accelerated from chronic exposure to loud noise. The Occupational Safety and Health Administration (OSHA) has a noise exposure standard which is set at the noise threshold where hearing loss may occur from long-term exposures. The maximum allowable level is 90 dBA averaged over eight hours. If the noise is above 90 dBA, the allowable exposure time is correspondingly shorter.

Sleep and Speech Interference. The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors the thresholds are about 15 dBA higher. Steady noise of sufficient intensity (above 35 dBA) and fluctuating noise levels above about 45 dBA have been shown to affect sleep. Interior residential standards for multi-family dwellings are set by the State of California at 45 dBA L_{dn} . Typically, the highest steady traffic noise level during the daytime is about equal to the L_{dn} and nighttime levels

are about 10 dBA lower. The standard is designed for sleep and speech protection and most jurisdictions apply the same criterion for all residential uses. Typical structural attenuation is 12-17 dBA with open windows. With closed windows in good condition, the noise attenuation factor is around 20 dBA for an older structure and 25 dBA for a newer dwelling. Sleep and speech interference is therefore possible when exterior noise levels are about 57-62 dBA L_{dn} with open windows and 65-70 dBA L_{dn} if the windows are closed. Levels of 55-60 dBA are common along collector streets and secondary arterials, while 65-70 dBA is a typical value for a primary/major arterial. Levels of 75-80 dBA are normal noise levels at the first row of development outside a freeway right-of-way. In order to achieve an acceptable interior noise environment, bedrooms facing secondary roadways need to be able to have their windows closed, those facing major roadways and freeways typically need special glass windows.

Annoyance. Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it had been determined that the causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The L_{dn} as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources. When measuring the percentage of the population highly annoyed, the threshold for ground vehicle noise is about 55 dBA L_{dn} . At an L_{dn} of about 60 dBA, approximately 2 percent of the population is highly annoyed. When the L_{dn} increases to 70 dBA, the percentage of the population highly annoyed increases to about 12 percent of the population. There is, therefore, an increase in the percentage of people highly annoyed of about 1 percent per dBA between an L_{dn} of 60-70 dBA. Between an L_{dn} of 70-80 dBA, each decibel increase increases by about 2 percent the percentage of the population highly annoyed. People appear to respond more adversely to aircraft noise. When the L_{dn} is 60 dBA, approximately 10 percent of the population is believed to be highly annoyed. Each decibel increase to 70 dBA adds about 2 percentage points to the number of people highly annoyed. Above 70 dBA, each decibel increase results in about a 3 percent increase in the percentage of the population highly annoyed.

Description of the Noise Environment in Hercules

Noise Sources

The major noise source in Hercules, like most other communities, is traffic. Interstate 80 is the most substantial source of noise. Railroad operations on two different rail lines also contribute significantly to the noise environment. Industrial sources, such as Pacific Refinery, contribute very little to noise level in the community of Hercules. All major noise sources were identified and classified by the level of noise generated as a major noise source (generates a noise level of 60 dBA L_{dn} or greater at distances beyond 300 feet), moderate noise source (generates a noise level of 60 dBA L_{dn} or greater at distances between 150 and 300 feet), and minor noise sources (generate noise levels of 60 dBA L_{dn} or greater at distances between 50 and 150 feet). The noise sources in Hercules are classified as follows:

- Major Noise Sources
 - Interstate 80 through Hercules
 - State Route 4 west of Franklin Canyon
 - San Pablo Avenue between State Route 4 and Sycamore
 - AT&SF Railroad east of Sycamore
 - Union Pacific Railroad through Hercules
- Moderate Noise Sources
 - State Route 4 east of Franklin Canyon
 - San Pablo Avenue east of State Route 4 and west of Sycamore
 - AT&SF Railroad west of Sycamore
 - Sycamore
 - Willow Avenue
 - Refugio Valley Road west of Redwood
- Minor Noise Sources
 - Hercules Avenue
 - Pheasant Way
 - Redwood
 - Lupine
 - Refugio Valley Road east of Redwood

Noise Monitoring

A noise measurement program was conducted during the period December 16-20, 1996. Data collected during this period were supplemented with noise measurement data collected in 1994 along Interstate 80. The purpose of the noise measurement program was to measure the strength of noise sources in the community and sample the noise environment that residences are exposed to. Noise measurement locations were determined in consultation with the City Community and Business Development Department. The measurement locations are shown on the noise contour map.

The noise measurements consisted of long-term measurements (i.e., 24 hours or longer) and short-term measurements (10 to 15 minutes) in duration. Long-term noise measurements are indicated with an "L" (e.g., L1, L2, LA, etc.), while short-term measurements are indicated with an "S" (e.g., S1, S2, S3, etc.). A summary of the long-term noise measurements are presented in Table 3 and the results of short-term measurements are presented in Table 4.

Freeway and Highway Traffic Noise. Noise produced by Interstate 80 was characterized by noise levels measured at Locations L3, LA, LB, LC, LD, and S12. Figure 1 shows the daily trend in noise levels at residential areas on Brighton near Interstate 80. Measurement Locations L2, L5, and S1 were used to characterize noise produced by State Route 4. The daily trend in noise levels at residential areas near State Route 4 are shown in Figure 2.

Arterial Roadway Traffic Noise. Noise produced along San Pablo Avenue was characterized by noise measurements at Locations L1, L4, and S8. The daily trend in noise levels along San Pablo Avenue are shown in Figure 3. Location S8 was affected by Interstate 80 traffic noise. Noise measurement Location L7 characterizes traffic noise along Sycamore near Redwood. Figure 4 shows the daily trend in hourly noise levels at this location.

Local Roadways. Noise levels along local roadways were measured. Location L8 characterizes traffic noise along Refugio Valley Road, Location L9 characterizes noise levels along Pheasant Way, and Location L11 characterizes noise levels along Hercules Avenue. The daily trend in noise levels for these roadways are shown in Figure 5 for Refugio Valley Road and Figure 6 for Hercules Avenue. Short-term noise measurements were made throughout residential areas (S3, S4, S5, S6, S7, S9, and S10) to characterize typical daytime noise levels in residential communities.

Measurement Location	Description	Date	Measured Noise Level (dBA)					Noise Sources
			L _{dn}	L _{eq}	L ₁₀	L ₅₀	L ₉₀	
L1	Along San Pablo Ave. near Hercules Ave. Meter located 110 ft. from the centerline and 30 ft. above the roadway.	12/16-18/96	66	62	66	60	50	Traffic on San Pablo Ave. and trains on the AT&SF rail line.
L2	At end of Sheffield near Rte. 4. Approximately 600 ft. from Rte. 4 centerline.	12/16-18/96	70	67	70	66	56	Traffic on Rte. 4 near Willow Ave.
L3	At north end of Brighton near I-80. Meter placed approximately 1,000 ft. from I-80.	12/16-18/96	65	60	61	58	55	Traffic on I-80 and some local traffic.
L4	Along San Pablo Ave. near Linus Pauling. Meter located 90 ft. from the centerline and 20 ft. above the roadway.	12/16-18/96	65	61	64	57	51	Traffic on San Pablo Ave.
L5	Along Rte. 4 at Claeys Rd. near Palm Ave. Meter located 125 ft. from Rte. 4 centerline.	12/18-19/96	72	68	72	66	53	Traffic on Rte. 4.
L6	Along the AT&SF Railroad, behind City Hall. Meter located 130 ft. from the railroad tracks, about 2,000 ft. from Rte. 4, and about 4,000 ft. from I-80.	12/18-19/96	75	65	59	56	52	Trains on the AT&SF line. Maximum noise levels from trains are 90 dBA.
L7	Along Sycamore at Redwood. Meter located 60 ft. from the centerline of Sycamore.	12/18-19/96	67	63	66	58	48	Traffic on Sycamore and Redwood.
L8	Along Refugio Valley Rd. at Refugio Valley Regional Park. Meter located 60 ft. from the centerline of Refugio Valley Rd.	12/18-19/96	66	62	67	54	37	Traffic on Refugio Valley Rd.
L9	Along Pheasant Way near Tanager. Meter located 35 ft. from the centerline of Pheasant.	12/19-20/96	60	55	55	43	35	Traffic on Pheasant Way and background.
L10	Along Willow Ave. near Mariners Pointe. Meter located 65 ft. from the centerline of Willow Ave.	12/19-20/96	64	59	64	55	44	Traffic on Willow Ave.
Summary of Long-Term Noise Measurement								Table 3 (Pg 1 of 2)

Measurement Location	Description	Date	Measured Noise Level (dBA)					Noise Sources
			L _{dn}	L _{eq}	L ₁₀	L ₅₀	L ₉₀	
L11	Along Hercules Ave. near Skelly. Meter located 30 ft. from the centerline of Hercules Ave.	12/19-20/96	65	61	65	53	44	Traffic on Hercules and surrounding roads.
L12	Along Railroad Ave. and the Union Pacific Railroad. Meter located 45 ft. from the centerline of Railroad Ave. and 100 ft. from the railroad tracks.	12/19-20/96	68	62	54	45	39	Trains and distant traffic. Maximum noise levels from trains are 95 dBA.
LA	Near I-80, south end of Mission Springs near Village Parkway. Approximately 200 ft. from the centerline of I-80.	Jan. 1994	74	--	--	--	--	Traffic on I-80.
LB	Near I-80 on Ponderosa Trail. Behind soundwall in residential backyard. Meter placed approximately 500 ft. from I-80.	Jan. 1994	65	--	--	--	--	Traffic on I-80.
LC	Near I-80 on Ponderosa Trail. Above soundwall in residential backyard. Meter placed approximately 500 ft. from I-80.	Jan. 1994	71	--	--	--	--	Traffic on I-80.
LD	Near I-80 on Peridot Ct. Meter located in backyard behind fence above I-80, approximately 300 ft. from the edge of the roadway.	Jan. 1994	60	--	--	--	--	Traffic on I-80.

Summary of Long-Term Noise Measurements

Table 3 (Pg. 2 of 2)

Source: ILLINGWORTH & RODKIN, INC./Acoustics • Air Quality

Location	Description	Start Time ¹	Measured Noise Level (dBA)				Noise Sources
			L _{eq} ²	L ₁₀ ³	L ₅₀ ³	L ₉₀ ³	
S12	North end of Newbury	4:15 pm	54	56	53	51	I-80 traffic
S13	Near Union Plant 2,000 ft. from Union Plant and 4,000 feet from Rte. 4	4:45 pm	51	52	51	49	Rte. 4 traffic Union Plant

¹ Noise measurements made over 10- or 15-minute periods during December 19-20, 1996.

² L_{eq} -- The average A-weighted noise level during the measurement period.

³ L₁₀, L₅₀, L₉₀ -- The A-weighted noise levels that are exceeded during the measurement period 10, 50, and 90 percent of the time, respectively.

Summary of Short-Term Noise Measurements

Table 4 (Pg. 2 of 2)

FIGURE 1
NOISE LEVELS NEAR INTERSTATE 80 (L3)

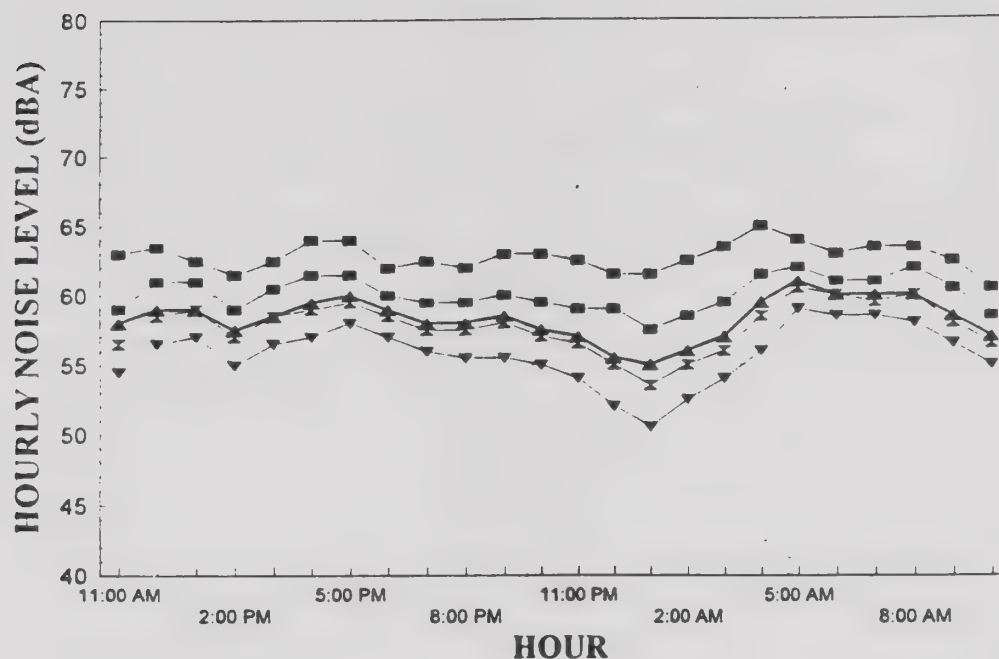


FIGURE 2
NOISE LEVELS ALONG STATE ROUTE 4 (L2)

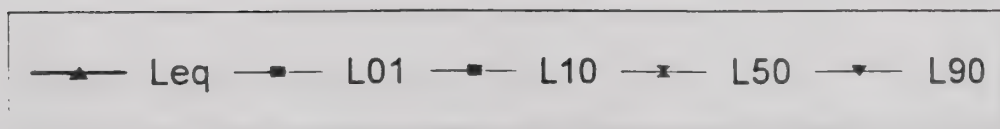
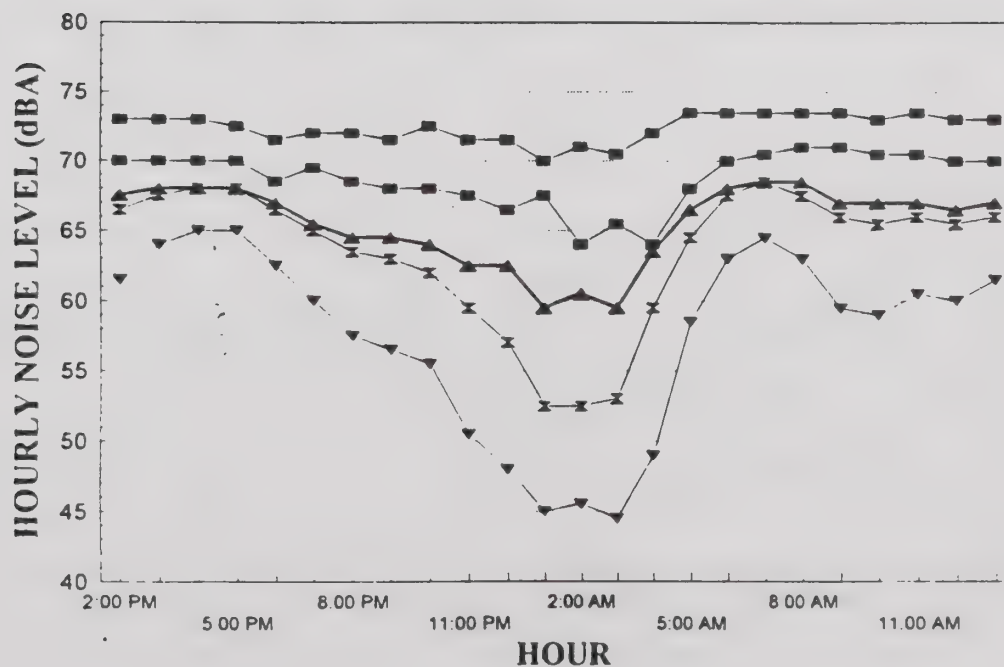


FIGURE 3
NOISE LEVELS ALONG SAN PABLO AVE. (L1)

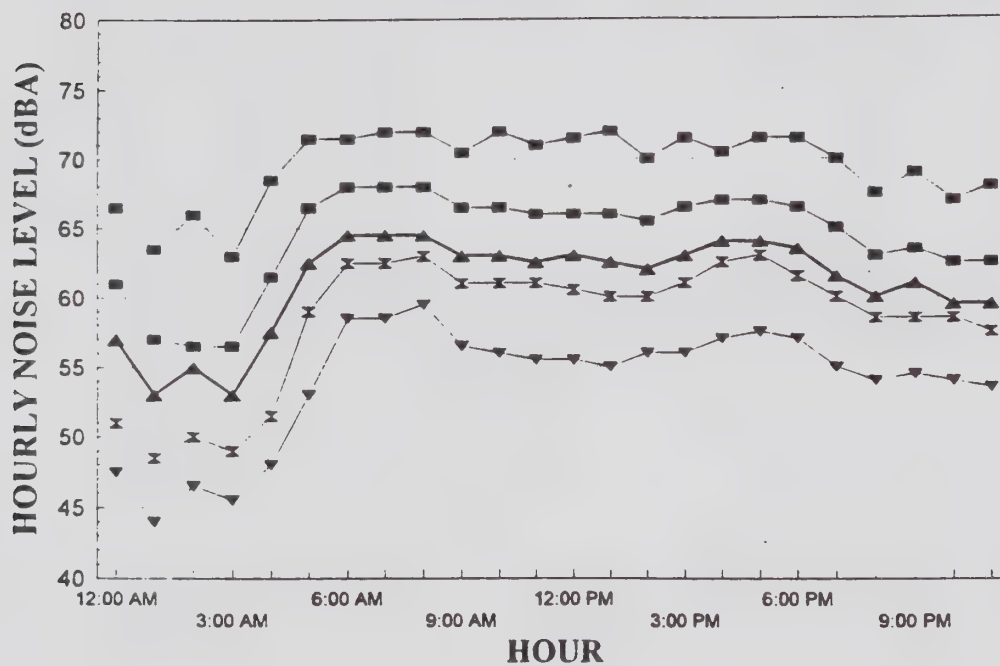
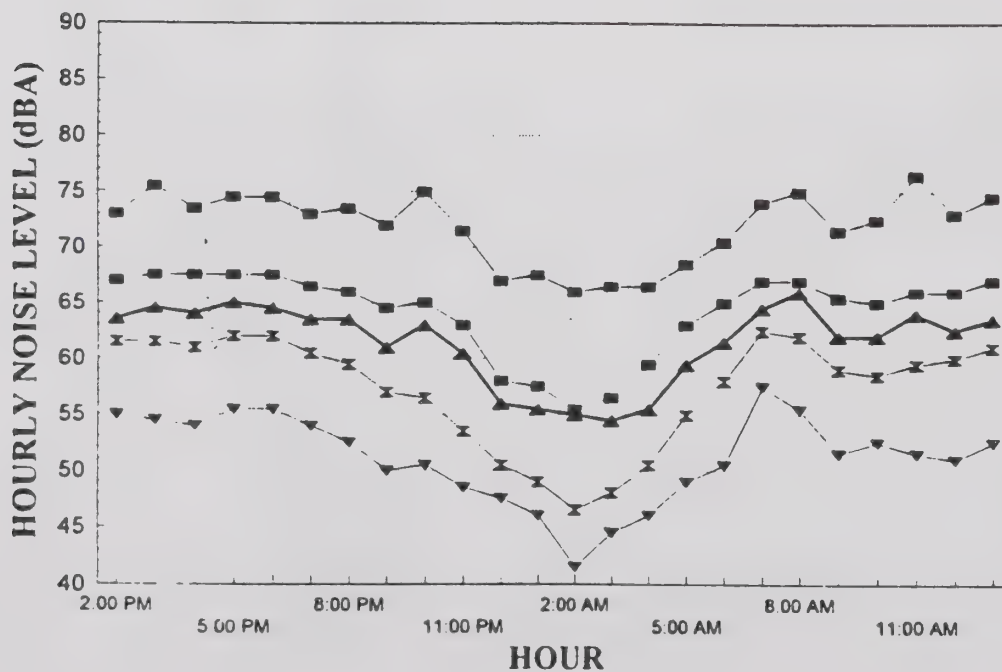


FIGURE 4
NOISE LEVELS ALONG SYCAMORE (L7)



—▲— Leq —■— L01 —●— L10 —x— L50 —▼— L90

FIGURE 5
NOISE LEVELS IN REFUGIO VALLEY (L8)

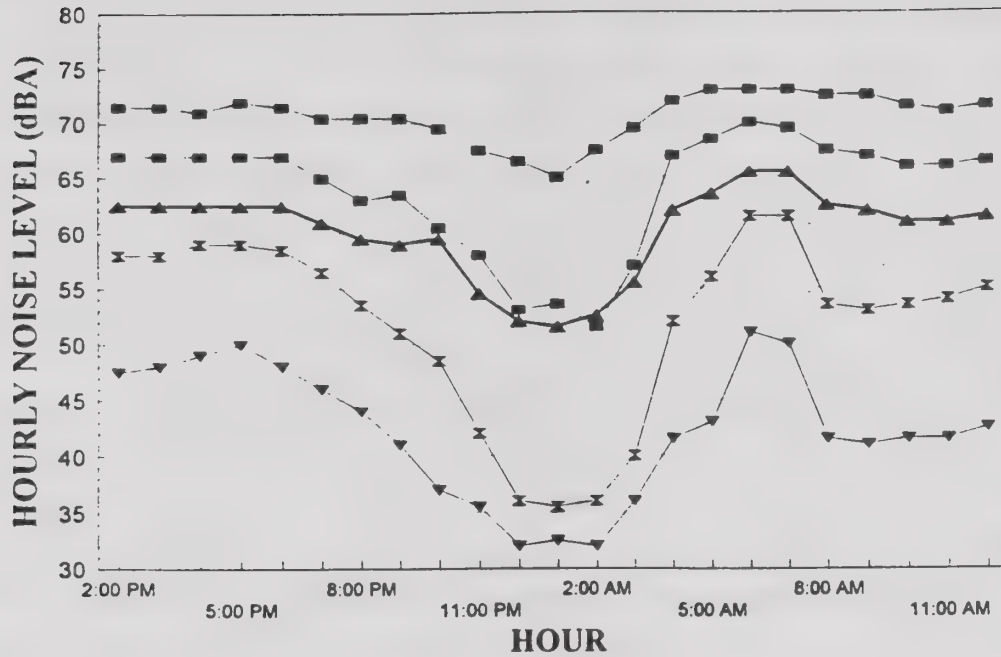


FIGURE 6
NOISE LEVELS ALONG HERCULES (L11)

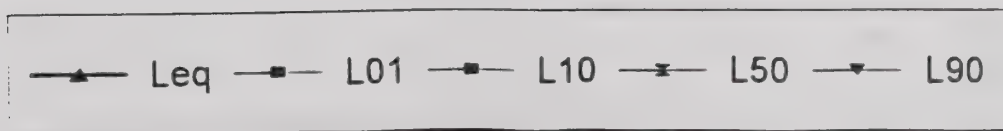
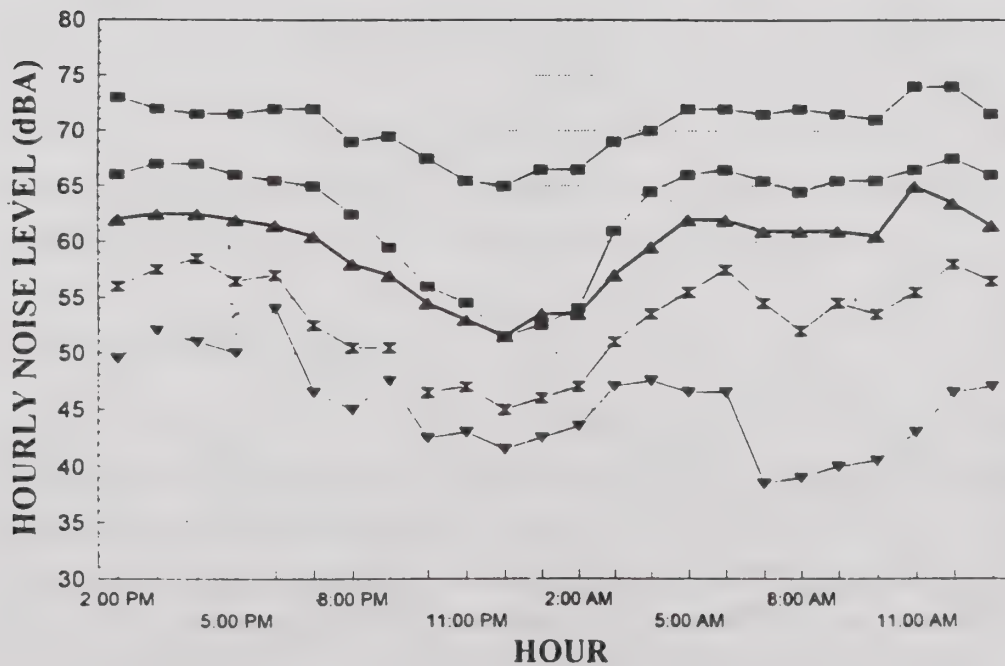


FIGURE 7
NOISE LEVELS NEAR THE AT&SF RR (L6)

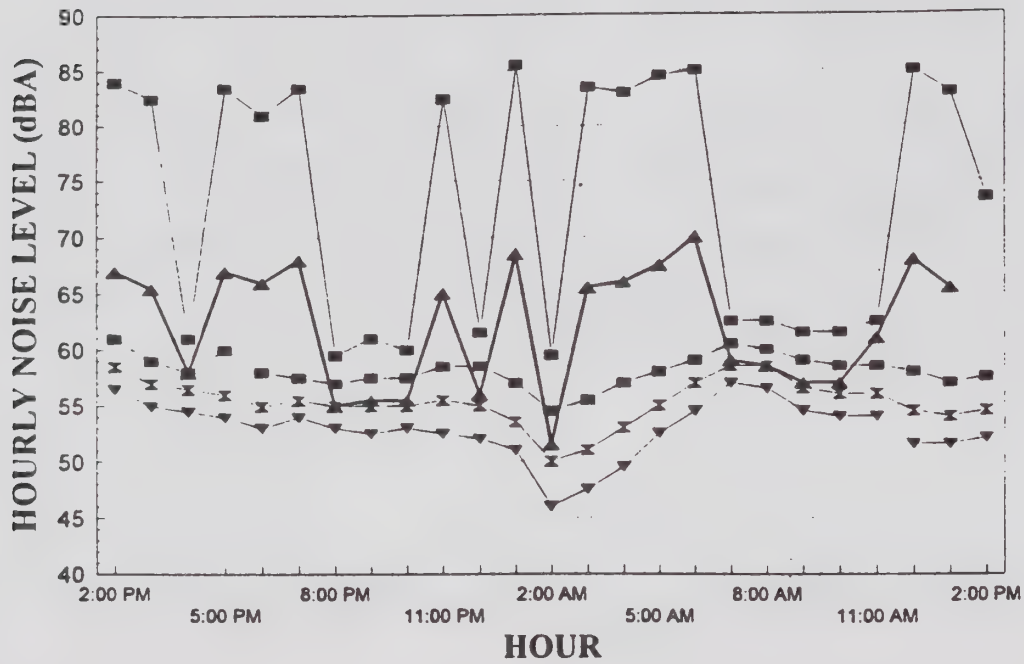
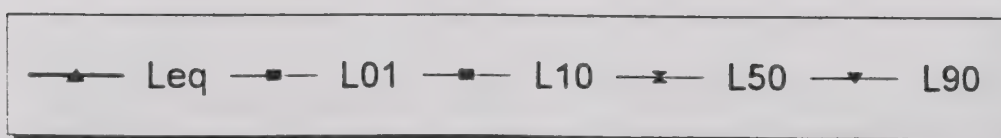
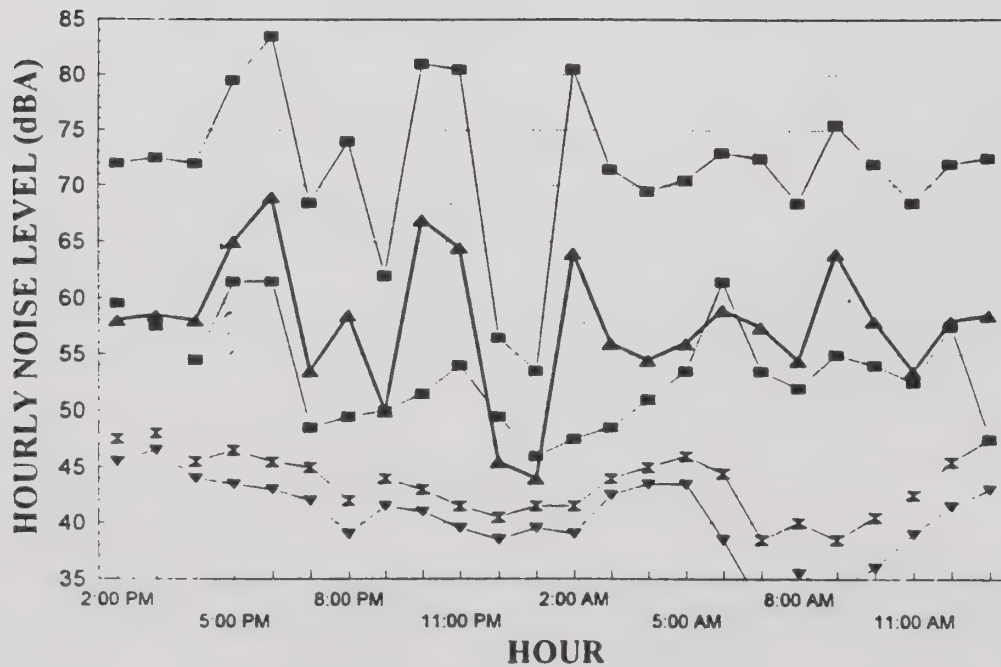


FIGURE 8
NOISE LEVELS ALONG THE UP RR (L12)



Train Noise. Location L6 was used to characterize train noise along the AT&SF Railroad. Location L6 is also exposed to traffic noise from State Route 4 and Interstate 80. The daily trend in hourly noise levels at this location are shown in Figure 7. At this location, approximately 21 trains passed by during the 24-hour measurement period. Late night and early morning train passages result in the relatively high L_{dn} noise levels. Noise from train activity on the Union Pacific Railroad was measured at Location L12. The hourly trend in noise levels produced by train activity along this rail line are shown in Figure 8. About 20 to 25 trains passed by during the 24-hour measurement period.

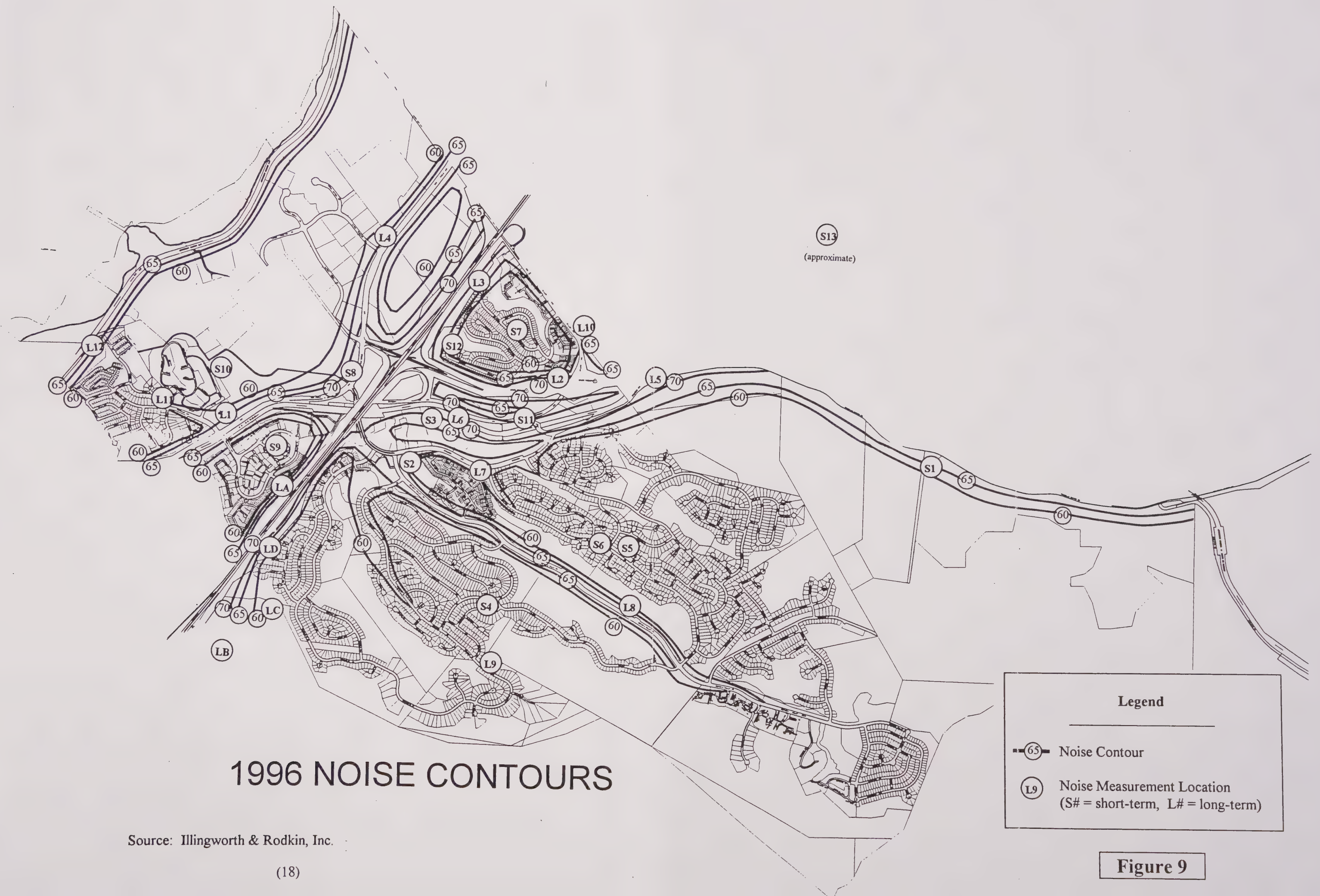
Stationary Sources. The noise survey did not identify any substantial stationary sources in Hercules. Pacific Refinery appeared not to be operating during the noise monitoring period. Although the Union Carbon Plant is outside the Hercules City limits, noise measurements were made in the vicinity of the plant (Location S13) to characterize this source of noise. This measurement indicated that the Plant produces a noise levels of 60 dBA L_{dn} at a distance of about 500 to 1,000 feet from the plant.

Future Noise Environment

Much of Hercules is developed, therefore significant increases in traffic noise along local roadways is not anticipated. Currently, widening along Interstate 80 is underway that would add two additional traffic lanes. This could lead to an increase in traffic noise of up to 1 dBA. There are plans to increase traffic capacity on State Route 4 east of Hercules (through Franklin Canyon). This could increase State Route 4 traffic noise by about 3 dBA in Franklin Canyon and 1 to 2 dBA west of Willow Avenue. Train noise is too difficult to predict in the future, since the amount of rail traffic is dependent on many factors. It is likely that noise generated along these two rail lines will not change substantially.

Noise Contour Map

The noise measurements were used to develop a noise contour map of Hercules (Figure 9). These noise contours serve as a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of residences in Hercules to excessive noise. The contours represent day/night (L_{dn}) noise levels in 5 dBA increments for noise levels of 60 dBA L_{dn} or greater. Noise data computations used to draw the existing noise contours are shown in Table 7. Noise measurement locations are also shown on the noise contour map.



Road Segments	Noise Monitoring Location	Measured Noise Level Adjusted to L _{dn}	Distance From Measurement to Roadway Centerline (ft.)	Distances From Roadway Centerline		
				70 L _{dn} Contour (ft.)	65 L _{dn} Contour (ft.)	60 L _{dn} Contour (ft.)
I-80						
•West side - no soundwall	LA	74	200	370	796	1715
•East side - 6-ft. soundwall (Pinole)	LB	65	500	232	500	1077
•East side - no soundwall (Pinole)	LC	71	500	583	1256	2706
•East side - terrain and soundwall	LD	60	300	65	139	300
•East side - terrain	L3	65	500	232	500	1077
Route 4						
•West of Willow	L2	70	250	250	539	1160
•East of Willow	L5	72	125	170	366	789
•At Franklin Canyon	S1	62	210	62	133	285
San Pablo Avenue						
•Near Hercules Ave.	L1	66	110	60	128	276
•Near Sycamore	S8	65	300	139	300	646
•Near Linus Pauling	L4	65	90	42	90	194
Sycamore						
•At Redwood	L7	67	60	38	82	176
Other Roadways						
•Willow Ave. at Mariners Pointe	L10	64	65	26	56	120
•Refugio Valley Rd.	L8	66	60	32	70	151
•Pheasant Way near Tanager	L9	60	35	8	16	35
•Hercules near Zeus	L11	65	30	14	30	65
Railroads						
•AT&SF RR behind City Hall	L6	75	100	183	336	616
•Union Pacific along the waterfront	L12	68	100	78	144	264

HERCULES NOISE CONTOURING

TABLE 5

GOALS AND POLICIES

GOALS: The goals of the City of Hercules' Noise Element are to:

- Ensure that all new development is compatible with the existing and future noise environment;
- Prevent all new noise sources from increasing the existing noise level above acceptable standards; and
- Eliminate or reduce noise from existing or objectionable noise sources.

Policy 1: New residential development projects shall meet acceptable exterior noise level standards. The noise contour map on file at City Hall shall be used to screen projects to determine if acoustical studies will be required. The "normally acceptable" noise standards for new land uses established in Land Use Compatibility for Community Exterior Noise Environments shown in Table 6 shall be modified by the following:

- The maximum acceptable noise levels in residential areas is an L_{dn} of 60 dBA. This level shall guide the design and location of future development, and is a goal for the reduction of noise in existing development. A 60 dBA L_{dn} goal will be applied where outdoor use is a major consideration (e.g., backyards in single-family housing developments and recreation areas in multi-family housing projects). The outdoor standard will not normally be applied to small decks associated with apartments and condominiums, but these will be evaluated on a case-by-case basis. Where the City determines that providing an L_{dn} of 60 dBA or lower cannot be achieved after the application of feasible mitigations, an L_{dn} of 65 dBA may be permitted at the small decks at the discretion of the City Council.
- Indoor noise level shall not exceed an L_{dn} of 45 dBA in new housing units.

LAND USE CATEGORY	EXTERIOR NOISE EXPOSURE L _{dn} OR CNEL, dB					
	55	60	65	70	75	80
Residential, Hotels, and Motels		//////////////////// ////////////////////			XXXXXXXXXX XXXXXXXXXX	
Outdoor Sports and Recreation, Neighborhood Parks and Playgrounds				//////////////////// ////////////////////		XXX XXX
Schools, Libraries, Museums, Hospitals, Personal Care, Meeting Halls, Churches		//////////////////// ////////////////////			XXXXXXXXXX XXXXXXXXXX	
Office Buildings, Business Commercial, and Professional				////////////////	XXXXXXXX	XXX XXX
Auditoriums, Concert Halls, Amphitheaters	//////////////////// ////////////////////			XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXX		
Industrial, Manufacturing, Utilities, and Agriculture				//////////////////// ////////////////////		



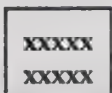
NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal convention construction, without any special insulation requirements.



CONDITIONALLY ACCEPTABLE

Specified land use may be permitted only after detailed analysis of the noise reduction requirements and needed noise insulation features are included in the design to mitigate noise to normally acceptable levels.



UNACCEPTABLE

New construction or development should generally not be undertaken because mitigation is usually not feasible to comply with noise element policies.

- If the noise source is a railroad, then the outdoor noise exposure criterion should be 70 dBA L_{dn} for future development.
- Noise levels in new residential development exposed to an exterior L_{dn} of 60 dBA or greater shall be limited to a maximum instantaneous noise level in bedrooms of 50 dBA. Maximum instantaneous noise levels in all other habitable rooms should not exceed 55 dBA. The typical repetitive maximum instantaneous noise level at each site would be determined by noise monitoring. Examples would include truck passbys on busy streets, train passbys and train warning whistles.
- Appropriate interior noise levels in commercial, industrial, and office buildings are a function of the use of space and shall be evaluated on a case-by-case basis. Interior noise levels in offices generally should be maintained at 45 dBA L_{eq} (hourly average) or less.
- These guidelines are not intended to be applied reciprocally. In other words, if an area currently is below the desired noise standards, an increase in noise up to the maximum should not necessarily be allowed. The impact of a proposed project on an existing land use should be evaluated in terms of the potential for adverse community response based on a significant increase in existing noise levels, regardless of the compatibility guidelines.
- For non-transportation related noise sources, outdoor noise levels within a residential property should not exceed the limits in Table 7. Interior noise levels shall be 15 decibels lower than those shown in Table 7.

Policy 2: New non-residential land development projects shall meet acceptable exterior noise level standards set forth in Table 6. The noise contour map on file at City Hall shall be used to screen projects to determine if acoustical studies will be required.

**MAXIMUM ALLOWABLE NOISE EXPOSURE
STATIONARY NOISE SOURCES¹**

	Daytime ⁵ (7 AM to 10 PM)	Nighttime ^{2,5} (10 PM to 7 AM)
Hourly L_{eq} , dBA ³	50	45
Maximum Level, dBA ³	70	65
Maximum Level, dBA Impulsive Noise ⁴	65	60

Note: Stationary noise sources include all non-transportation sources.

- ¹ As determined at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards may be applied on the receptor side of noise barriers or other property line noise mitigation measures.
- ² Applies only where the receiving land use operates or is occupied during nighttime hours.
- ³ Sound level measurements shall be made with "slow" meter response.
- ⁴ Sound level measurements shall be made with "fast" meter response.
- ⁵ Allowable levels shall be raised to the ambient noise levels where the ambient levels exceed the allowable levels. Allowable levels shall be reduced 5 dBA if the ambient hourly L_{eq} is at least 10 dBA lower than the allowable level.

**Maximum Allowable Noise Exposure
Stationary Noise Sources**

Table 7

Policy 3: Protect existing noise-sensitive land uses from long-term noise impacts generated by new projects. The City shall use the following criteria to judge the significance of long-term noise impacts on existing noise-sensitive land uses:

- Noise level increases resulting from traffic associated with new projects will be considered significant if: (1) the noise level increase is 5 dBA Ldn or greater and the future noise level is less than 60 dBA Ldn; or (2) the noise level increase is 3 dBA Ldn or greater and the future noise level is 60 dBA Ldn or greater.
- Noise levels produced by stationary sources associated with new projects will be considered significant if they exceed the noise level standards set forth in Table 7 as measured at any affected noise-sensitive land use.
- Noise levels produced by other noise sources (such as ballfields, etc.) will be considered significant if an acoustical study demonstrates that a significant adverse community response would occur. The criteria to judge the significance of the community response would be based on acceptable analysis techniques such as the International Standards Organization's "Assessment of Noise with Respect to Community Response, ISOR-1996-1971".

Policy 4: Noise created by commercial or industrial sources associated with new projects or developments shall be controlled so as not to exceed the noise level standards set forth in Table 7 as measured at any affected residential land use.

Policy 5: Adopt/update a noise ordinance or nuisance ordinance to control noise generating activities, such as barking dogs, loudspeakers, parties, power tools, etc.

Policy 6: Control the level of noise at noise-sensitive land uses generated by construction activities through implementation of the following measures:

- For construction near noise-sensitive areas, as determined by the Community and Business Development Department, require that noisy construction activities (including truck traffic) be scheduled for periods, according to construction permit to limit impact on adjacent residents or other sensitive receptors.
- Develop a construction schedule that minimizes potential cumulative construction noise impacts and accommodates particularly noise-sensitive periods for nearby land uses (e.g., for schools, churches, etc.)
- Where feasible, require that holes for driven piles be pre-drilled to reduce the level and duration of noise impacts.
- Where feasible, construct temporary solid noise barriers between source and sensitive receptor(s) to reduce offsite propagation of construction noise. This measure could reduce construction noise by up to 5 decibels.
- Require internal combustion engines used for construction purposes to be equipped with a properly operating muffler of a type recommended by the manufacturer. Also, require impact tools to be shielded per manufacturer's specifications.

Policy 7: Reduce the level of truck-generated noise in residential areas through implementation of the following restrictions:

- The City shall restrict truck traffic in residential areas except for non-regular deliveries within the area or on designated truck routes. The City shall review and update the noise ordinance to limit truck traffic noise impacts to sensitive receptors.
- The City shall post signs prohibiting trucks from using the proposed Claeys Road extension, except for local deliveries. All other trucks shall be required to use Sycamore Avenue to reach the Claeys Road/SR4 interchange.

IMPLEMENTATION

Implementation of the objectives and standards set forth in this element includes community planning procedures and noise attenuation techniques to eliminate much of the negative effects of noise through the design process. Some established communities have adopted noise ordinances where there has been a concern over rising noise levels. Noise levels should be monitored as the City grows and develops.

1. Community Planning Procedures

Noise considerations will be an integral part of the community planning and design process. At each phase, more definitive information will be required to insure that the objectives and standards of the Noise Element are satisfied. In a more specific sense the noise exposure contours are the City's noise data base, and will be of interest to all who prepare EIR's or are involved in the environmental impact review process.

The land use compatibility table will be helpful in identifying the potential noise impacts associated with a project during the initial study phase. Those who prepare EIR's or other environmental studies will use the noise exposure maps to help them in identifying noise impacts.

a. General Plan and Zoning Proposals

The review of the General Plan and zoning proposals considered noise in terms of general land use, open space, and traffic circulation patterns. Noise contour maps have been prepared for the present. These contours are not expected to change significantly in the future. Areas of potential noise impacts have been identified based on the community noise standards contained in this Element. These areas will received special attention in subsequent planning and design reviews.

b. Neighborhood Plans

The proposed neighborhood plan will be reviewed in terms of present and future noise levels and means of noise attenuation. Techniques such as site and building design, barriers, and traffic planning will be considered and incorporated into the Plan where needed.

c. Tentative Maps and Planned Unit Developments

Tentative maps and PUD's will incorporate noise attenuation techniques into the site design based on more definitive noise considerations. These can be required as conditions to the approval of such maps and permits.

2. Noise Attenuation Techniques

Where noise levels exceed community noise standards for a proposed land use, one or more of the following techniques may be required to reduce the noise to acceptable level.

a. Traffic Planning

Roadway design, traffic signalization and other traffic planning techniques can reduce noise caused by speed or acceleration of vehicles. The limiting of truck traffic to certain designated sections of the City can help in maintaining acceptable noise levels in residential neighborhoods.

b. Site Planning

Proper site planning to reduce noise impacts is the first area that should be investigated for a given project. By taking advantage of the natural shape and contours of the site, it is often possible to arrange the buildings and other uses in a manner which will reduce and possibly eliminate noise impact. Planning unit developments are particularly conducive to site planning techniques. Site planning techniques include:

- (1) Increasing the distance between the noise sources and the receiver.
- (2) Placing non-noise sensitive structures such as parking lots, maintenance facilities and utility areas between the source and the receiver.
- (3) Using non-noise sensitive structures such as garages to shield noise-sensitive areas.
- (4) Orienting buildings to shield outdoor spaces from a noise source.

c. Architectural Layout

In many cases, noise reduction requirements can be met by giving attention to layout of noise-sensitive spaces. Bedrooms, for example, will be considerably quieter if placed on the side of the house facing away from the freeway. Similarly, balconies facing freeways should be avoided. Quiet outdoor spaces can be provided next to a noisy highway by creating a U-shaped development which faces away from the highway. Proper architectural layout often can eliminate the need for costly construction modifications.

d. Noise Barriers

Noise barriers or walls are commonly used to reduce noise levels from ground transportation noise sources and industrial sources. Noise barriers serve a dual purpose in that they can reduce the noise level both outdoors and indoors.

To be effective, a noise barrier must be massive enough to prevent significant noise transmission through it and high enough to shield the receiver from the noise source. The minimum acceptable surface weight for a noise barrier is 4 lbs./sq. ft. (equivalent to 3/4-inch plywood) and the barrier must be carefully constructed so that there are no cracks or openings. To be effective, a barrier must interrupt the line-of-sight between the noise source and the receiver. As an example of this relationship, consider a flat area with a housing tract next to a road. If there are no diesel trucks on the road, a 7-foot high barrier will reduce the traffic noise by about 8 dBA. If there are trucks then the noise from the trucks will only be reduced by about 4 dBA. The reason is that the stacks of the diesel trucks will be visible above the barrier and the noise path will not be completely interrupted.

Another important and often overlooked consideration in the design of noise barriers is the phenomenon of "flanking". Flanking is a term used to describe the manner by which a noise barrier's performance is compromised by noise passing around the end of a barrier. Short barriers regardless of height, provide essentially no reduction in the overall noise level. The effects of flanking can be minimized by bending the wall back from the noise source at the ends of the barriers.

In addition to meeting acoustical requirements, noise barriers must be evaluated for possible maintenance problems, aesthetic and environmental considerations, safety conflicts and cost.

e. Construction Modifications

If site planning, architectural layout, noise barriers or a combination of these measures do not achieve the required noise reduction for the building in question, it will be necessary to modify the building's construction. Indoor noise levels due to exterior sources are controlled by the noise reduction characteristics of the building shell. The walls, roof, ceilings, doors, windows and other penetrations are all determinants of the structure's overall noise reduction capabilities.

In general, windows and doors are the acoustical weak links in a building. Often all that is required is that the windows be sealed on the noise side of the building and an alternate means of ventilating the building can be provided. Beyond this, thicker windows or double-glazed windows will be required. Doors should not be located on the side of the building facing a noisy source. If they are, they should be solid-core doors and should be equipped with an appropriate acoustical door gasket.

In cases where more noise reduction is required, the ceiling/roof and/or the walls must be modified to provide the required noise reduction. The actual modifications will depend on the amount of noise reduction required.

f. The Noise Exposure Contours and The California Noise Insulation Standards

The California Noise Insulation Standards (Title 24 of the California Government Code) for multi-family dwellings requires an acoustical report for dwellings proposed in areas where the L_{dn} exceeds 60 dBA. The purpose of the acoustical report is to demonstrate the manner by which the development will meet the standards for interior noise levels. The 60 dBA L_{dn} noise contour on the noise exposure map should be used to determine where a noise measurement will be required to determine compliance with the standard. In those cases where the development would be located in an area where the L_{dn} exceeds 60 dBA, on-site noise measurements should be required because local on-site conditions may cause somewhat different noise levels than the contours show. If the noise measurement shows that the on-site L_{dn} exceeds 60 dBA, then the acoustical report would be required. Developments located outside the 60 dBA L_{dn} contour would not require a measurement.

3. Noise Monitoring

Noise levels from transportation systems and other sources should be monitored in terms of community standards as the City grows. If levels are found to be increasing to unacceptable levels, the City may choose to adopt and enforce ordinances regulating various noise generators within the City.

Adequate enforcement of the ordinance would require expertise necessary to accurately measure noise levels and analyze noise reduction alternatives. The role of enforcement could be handled by the police.

**HAZARDOUS WASTE MANAGEMENT
PLAN ELEMENT**

VIII

Approved by the City Council
December 1990

CITY OF HERCULES
FINAL HAZARDOUS WASTE MANAGEMENT PLAN

AN ELEMENT OF THE
HERCULES GENERAL PLAN

December 1990

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EXECUTIVE SUMMARY

The City of Hercules has created this Hazardous Waste Management Plan (HWMP) to be included as an element of the City General Plan. The Plan is intended to achieve the twin goals of:

- o Safe and effective management of hazardous waste within the City of Hercules
- o Protection of public health and safety and the environment

In order to accomplish these goals, the Plan focuses on land uses and facility siting criteria as a major emphasis. The Plan also inventories existing hazardous waste generation and export, projects hazardous waste generation to the year 2000 and defines facilities siting needs and criteria. Policies and programs for effective management of hazardous waste now and in the future are identified as well as implementation measures for those policies and programs.

REGULATORY BACKGROUND

This Plan has been developed under the provisions of the Tanner Legislation (AB 2948 (1986), AB 1201 (1989)) which provides that cities may adopt a Hazardous Waste Management Plan provided that it is consistent with provisions of the respective County Plan. This Plan has been prepared to be consistent with the Contra Costa County Final HWMP (Contra Costa County 1989a) which was approved by the California Department of Health Services (DHS) on February 28, 1990. This Plan has also been developed to conform to the guidelines for HWMPs formulated by the DHS (DHS 1987a,b).

The City of Hercules was notified of approval of the Contra Costa County HWMP during June 1990. Following that notification, the City must adopt a Plan within 180 days if it wishes to do so. This Draft HWMP is being circulated for public comment so that it may be revised and ready for final approval within the statutory period.

HAZARDOUS WASTE GENERATION AND MANAGEMENT

The City of Hercules has been dealing with the issues of hazardous waste management, solid waste management and emergency response for several years. The City is a member of Joint Powers Authority (JPA) for solid waste management and for emergency response with four other Contra Costa County cities and the County to deal with these issues. The West County Solid Waste JPA is currently working with the requirements of AB 939 to address household hazardous waste, resource recovery and recycling issues. The West County Emergency Response JPA has been dealing with multi-hazard issues and has been instrumental in the establishment of a HAZMAT response team at the Richmond-Hilltop Fire Station.

Hazardous waste generated within the city limits is currently limited to one "large quantity generator" (as defined by DHS as those generating more than 1.0 tons per month of hazardous waste), a number of small quantity generators and household hazardous waste. The large quantity generator is Pacific Refining Company. This company accounted for approximately 57 percent of the approximately 741.3 tons of hazardous waste shipped off-site in 1988. Seven percent of the hazardous waste generated in the City in 1988 came from disposal of contaminated soil from site cleanups, while 26 percent came from small quantity generators (except waste oil), 7 percent from small quantity waste oil and three percent came from household hazardous waste.

Hazardous waste production in Hercules is expected to increase in the future both from expansions of existing businesses and the addition of new businesses. This Plan projects waste generation in the year 2000 both with and without waste minimization programs. It is possible that concerted cooperative waste minimization programs supported by both the City and local industry could result in overall reduction of hazardous waste on a citywide or regional basis.

LOCAL RESPONSIBILITIES

The Local Government Commission has identified local government responsibilities for hazardous waste management involving three categories:

- o Waste reduction
- o Enforcement
- o Providing for waste management capacity

Since the City of Hercules has a relatively small amount of waste generation within its borders, a regional approach is probably the best means of addressing these local responsibilities. The City will investigate the feasibility of a Joint Powers Agreement (JPA) to deal with hazardous waste management issues. Waste reduction programs could be better handled by an entity (such as a JPA) with a larger base of industries than are present in Hercules.

Enforcement of hazardous waste ordinances will be carried out by the City within its boundaries in terms of police response. The City will co-inspect industrial facilities as needed in coordination with the Rodeo-Hercules Fire Protection District. Other hazardous waste management issues will be coordinated with the JPA (if deemed feasible) or with appropriate county agencies.

Waste management capacity is only present in the City as on-site waste reduction capabilities at large quantity generator sites. There is no treatment, storage or disposal facility (TSD) in or near the City of Hercules. The City intends to explore siting of any facilities, as needed, on a regional basis in coordination with the existing JPA's, a newly created JPA for hazardous waste (if deemed feasible) or with Contra Costa County. This Plan contains siting criteria for TSD facilities.

PLAN POLICIES AND PROGRAMS

From the two major goals of the HWMP, this document defines a set of objectives and corresponding policies and programs with which the City of Hercules proposes to improve and more closely control hazardous waste management. The policies and programs involve: 1) adoption of administrative authority to more closely monitor and enforce hazardous waste ordinances, 2) establishment of coordinated efforts with appropriate regional and county agencies, 3) training for city workers, and 4) establishment of necessary programs to minimize hazardous waste produced by businesses and households.

PLAN IMPLEMENTATION

Recommendations for effective implementation of the HWMP include public education and participation, an ongoing data collection and analysis program and a waste reduction implementation program. Specific recommendations for facilities siting requirements, transportation and storage regulations for hazardous waste, emergency response coordination, monitoring and enforcement are included in the Plan. Also included are recommended management measures for large and small quantity generators, contaminated sites and household hazardous waste. The City of Hercules intends to implement hazardous waste management programs which do not cause duplicative effort or paperwork on the part of industry, small businesses or residents.

Implementation will occur through the City Manager and designated departments coordinating specific hazardous waste management tasks to be assigned as shown in the following chart. All emergency response implementation will be coordinated with the Rodeo-Hercules Fire Protection District (RHFPD) and appropriate county and state agencies. The City will investigate the feasibility of a JPA for hazardous waste management issues which would most likely be implemented with other west-county cities.

CHART OF DEPARTMENT RESPONSIBILITIES
FOR HWMP IMPLEMENTATION

TASK	POSITION/DEPARTMENT	PAGE
<u>One Time Tasks</u>		
JPA Development	City Manager	14
Establish Data Base	Planning Director	64
Waste Reduction Implementation	Planning Director	64
Review of New Facility Applications	Planning Director	46
City Facility Inventory	Public Works Director	67
<u>Ongoing Tasks</u>		
Maintain Data Base	Planning Director	64
Public Education/Participation	Planning Director	63
Waste Reduction Programs	Planning Director	64
Household Hazardous Waste Program	Public Works Director	63
Transportation Programs	Public Works Director	66
Monitoring & Evaluation Programs	Planning Director	73
Small Quantity Generator Programs	Planning Director	68
Emergency Response Programs	Police Chief, (RHFPD)	71

1.0 INTRODUCTION

Hazardous waste generation in Hercules occurs primarily at two facilities which represent the petrochemical and biochemical industries. These industries in addition to 1) other smaller industrial generators, 2) some non-industrial commercial businesses which deal in hazardous materials, and 3) residential households all create proportional amounts of hazardous waste. Safe and effective management of that waste to protect public health and the environment is a major concern of the Hercules City Government.

Due to a growth in commercial development in the City, hazardous waste management has become an important priority of the residents of Hercules. Based on this priority, in March 1990, the City contracted for the preparation of a specific City Hazardous Waste Management Plan (HWMP) to augment the Contra Costa County HWMP. This document will serve as the primary planning document for hazardous waste in the City of Hercules.

Hazardous waste is defined by the State of California in Section 25117 of the Health and Safety Code as:

25117. "Hazardous waste"

(a) "Hazardous waste" means either of the following:

(1) A waste, or combination of wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may either:

(A) Cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness.

(B) Pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

(2) A waste which meets any of the criteria for the identification of a hazardous waste adopted by the Department (DHS) pursuant to Section 25241.

(b) "Hazardous waste" includes, but is not limited to, RCRA hazardous waste.

(c) Unless expressly provided otherwise, the term "hazardous waste" shall be understood to also include extremely hazardous waste and acutely hazardous waste.

The City of Hercules Hazardous Waste Management Plan has been prepared pursuant to AB 2948 (Tanner, 1986) and to Final Guidelines for the Preparation of Hazardous Waste Management Plans (Department of Health Services 1987a,b). It has been prepared to be consistent with the goals, objectives and basic content of the Contra Costa County Final County Hazardous Waste Management Plan (Contra Costa County Community Development Department 1989). This Plan has been constructed to meet the specific needs of the City of Hercules and to conform with the goals and objectives of the citizens and the city government.

This HWMP consists of the following major components:

- o An introduction to the Plan and its purpose (Chapters 1.0 and 2.0)
- o A statement of goals, objectives and policies for the general management of hazardous waste and the potential siting of hazardous waste management facilities (Chapters 3.0 and 4.0)

- o An analysis of hazardous waste generated within the City, including the volumes produced of each waste category, and expected rates of hazardous waste generation to the year 2000 (Chapter 5.0, Sections 5.1,5.2)
- o A description of existing hazardous waste management facilities (Chapter 5.0, Section 5.3)
- o An analysis of the potential for reduction of the volume and hazard of hazardous waste at the source and/or the potential for recycling of such waste (Chapter 5.0, Section 5.6)
- o A discussion of the waste generated by light industrial, commercial zone businesses and residential households, and the need for programs to manage this waste (Chapter 5.0, Sections 5.14 and 5.15)
- o A determination of the need for additional hazardous waste facilities to manage the volume of hazardous waste currently produced or projected to be produced in the year 2000 (Chapter 5.0, Sections 5.4 and 5.5)
- o An identification of existing hazardous waste facilities which can be expanded to accommodate projected needs and siting criteria to be used in siting new facilities (Chapter 5.0, Section 5.7)
- o Definition of programs and a schedule for city actions necessary to implement this plan (Chapter 6.0)

References used in the report are cited in Chapter 7.0. Project staff are acknowledged in Chapter 8.0. Supporting tables, maps and diagrams are included in Chapters 9.0 and 10.0, with detail supporting technical material in Chapter 11.0.

The City of Hercules is located within an area of highly diverse land uses and jurisdictions (Figures 1 and 2). Land uses vary from industrial and office park areas to retail commercial centers, residential communities and open space, but the major land use is now residential. These varied uses are present within the city limits (Figure 3) and in adjacent cities and counties in the eastern portion of the San Francisco Bay Area.

The City of Hercules has legal jurisdiction over hazardous waste produced or hazardous materials handled within the city limits. The City also has a strong interest in hazardous waste and hazardous materials which may affect areas within the city limits through accidents, spills, transport or natural processes (runoff or leaching). Thus this report has focused on the City and an area northeast of the City termed the City's Sphere of Influence (Figure 3). The City has adopted a policy position of annexing properties within the Sphere of Influence, providing development of those properties ensure a continued high standard relative to environmental quality. Part of such assurance will be conformance of properties within the Sphere of Influence with this Plan.

This Plan has been developed in conjunction and with the assistance of Contra Costa County agencies including the County Planning Department, County Health Department and the Rodeo-Hercules Fire Protection District. In addition, the City of Hercules has worked with cities in nearby Contra Costa County in the development of this plan. Personnel from the State Department of Health Services have also contributed expertise and assistance.

2.0 PURPOSE

The passage of AB 2948 in September of 1986 authorized counties and cities in California to prepare Hazardous Waste Management Plans (HWMPs). Subsequently, every county in the State elected to prepare a plan to manage all hazardous wastes in their respective counties. While extremely beneficial to developing data and developing policies on a county level, these plans are not aimed toward the specific needs of cities. AB 2948 (Chapter 1504, California Annotated Code) therefore provides for cities to elect to prepare their own Hazardous Waste Management Plans provided that such plans are consistent with the adopted county plan.

The Hercules HWMP has been formulated to conform with the federal, state and county hazardous waste laws, policies and regulations, and to bring together in one document waste management strategies for the City of Hercules. It is the intent of the City to develop an integrated approach to hazardous waste management which is workable at a city level and which enhances cooperation between the City and other affected jurisdictions.

This Plan synthesizes data on present and projected hazardous waste generated, stored, treated, transported or disposed of within the City of Hercules. From these data, County, State and Federal hazardous waste management statutes, regulations and existing city ordinances, a set of policy guidelines for hazardous waste management have been formulated (see Chapter 4.0). Based on these policies and existing statutes and ordinances, a variety of implementation measures and city programs are recommended (Chapter 6.0). It is the City of Hercules' intent to establish these policies and programs in order to ensure effective hazardous waste management at the local level, including coordination with existing and evolving county, state and federal programs.

The City will take a two-phased approach toward establishing these programs. The first phase will be adoption of this Plan and revision of appropriate ordinances, and the second phase will be establishment and implementation of the appropriate programs as growth in the generation of hazardous waste in the City makes this necessary and feasible.

3.0 GOALS AND OBJECTIVES

This Hercules Hazardous Waste Management Plan (HWMP) synthesizes information and formulates policies which make possible achievement of the overall goals of the City and this Plan. Those goals are: 1) to achieve the safe and effective management of hazardous waste within the City of Hercules, and 2) to protect the health and safety of the public and the environment.

This Plan inventories current wastes generated within the City, projects waste generation anticipated for the planning period (to year 2000) and determines specific needs for facilities, policies, regulations and procedures to safely and effectively manage that waste, now and in the future. To accomplish the Plan's goals and the objectives outlined below, a number of city programs are identified within the HWMP.

The objectives of this Hercules City HWMP are as follows:

- o Accept responsibility and develop appropriate planning for the safe and responsible treatment and transfer or disposal of wastes within the city jurisdiction or in coordination with other jurisdictions.
- o Designate prevention of deterioration of public health or the environment caused by hazardous waste as a primary goal of the city government.
- o Adopt policies and targets which restrict further increases in and seek reductions in the volume and toxicity of hazardous waste committed to land disposal.

- o Oppose increases of hazardous waste treatment, storage or disposal within the city limits unless such activities are consistent with this Plan, and laws and ordinances of the City of Hercules.
- o Encourage as a first priority, waste minimization and source reduction of existing waste generation facilities.
- o Encourage recycling, reuse and on-site treatment as second priorities for hazardous waste management techniques.
- o Provide strong direction and support to actively enforce laws, regulations and ordinances concerning issuance of permits, inspection, compliance and data availability concerning the generation, storage, transportation, treatment and disposal of hazardous waste or the generation, storage and transportation of hazardous materials.
- o Develop effective programs for waste management within the appropriate city agencies to achieve a coordinated strategy to deal with citywide waste management issues.
- o Work in coordination with other applicable jurisdictions to formulate workable agreements for inter-jurisdictional policies regarding mutual hazardous waste management concerns.
- o Investigate the feasibility of a Joint Powers Authority (JPA) or other regional agreement for the management of hazardous waste.

Taken as a group, these goals should provide an effective hazardous waste management effort within the City of Hercules, provided the City pursues effective and consistent development and implementation of the programs necessary to achieve these goals. Sections 4.3 and 4.4 summarize the major policies and recommended programs necessary to achieve these goals in a direct and effective manner.

4.0 LEGISLATION, POLICIES AND PROGRAMS

This HWMP is a comprehensive document covering hazardous waste management in Hercules from generation through reclamation, treatment and/or disposal. Specific recommendations are made in the plan to improve existing methods of hazardous waste management and to develop and implement specific city programs. The goals of these programs will be to continue and improve effective hazardous waste management to protect public health and the environment of the City of Hercules in the future.

The Contra Costa County Final Hazardous Waste Management Plan (Contra Costa County 1989a) states that the County is one of the largest generators of hazardous waste in the State and that most of that waste is treated in on-site treatment facilities. The remainder of the generated waste is managed in off-site recycling, treatment or disposal facilities, principally outside of the County. The county HWMP indicates that this export of hazardous waste for treatment is likely to continue in the foreseeable future due to the lack of available treatment, storage and disposal (TSD) facilities within the county, and economic factors. The HWMP indicates the intention of the County to work with other counties or the State to solve waste disposal problems which may not be solvable within the County.

The City of Hercules currently has within its borders one large industrial generator of hazardous waste (according to DHS definition, large quantity generators are those producing more than 1.0 tons per month of hazardous waste). In addition there are a number of Small Quantity Generators (SQG's) and a small amount of hazardous waste generated by small-scale commercial and residential users. Total generation of hazardous waste in Hercules is relatively small in comparison to nearby industrial parts of Contra Costa County.

4.1 LEGISLATIVE AND REGULATORY BACKGROUND

In September of 1986, Assembly Bill 2948 (Tanner) was enacted. This Bill, now a part of the State Health and Safety Code, authorized counties and cities to prepare Hazardous Waste Management Plans or supplemental hazardous waste management elements. Subsequent to passage of AB 2948, each county within the State elected to prepare a Hazardous Waste Management Plan (HWMP). These plans have been submitted to the State Department of Health Services and are undergoing final State approval and local adoption processes.

The county HWMPs provide general overall data for hazardous waste management at the county level. Certain cities, particularly those with a significant industrial sector, require more detailed information for hazardous waste management within their boundaries. AB 2948 provides such cities authority for developing such a city HWMP provided the city plan is consistent with the adopted county HWMP.

In 1989, the legislature passed AB 1201 (Tanner) amending the original Assembly Bill (AB 2948) on Hazardous Waste Management Plans. The language in AB 1201 leaves unchanged the authority for cities to prepare HWMPs, but does provide additional detailed guidance and some provisions for the process of siting new hazardous waste management facilities.

The Hercules City HWMP has been developed in accordance with AB 2948 (Tanner), AB 1201 (Tanner) and the California Department of Health Services Guidelines for the Preparation of Hazardous Waste Management Plans (DOHS 1987a). The Plan has also been developed to be consistent with the policies and provisions of the Contra Costa County Final Hazardous Waste Management Plan (Contra Costa County 1989).

4.2 PLAN COMPONENTS AND KEY RESULTS

This HWMP will serve as the primary planning document for the management of hazardous waste within the City of Hercules. The scope of this Plan includes the generation, storage, handling, recycling, treatment, transport and disposal of such waste. To the extent that hazardous materials are of significance as waste sources or as major hazards, such materials are also discussed herein. The document recommends programs which deal more thoroughly with hazardous materials issues which are beyond the scope of this Plan.

4.3 HAZARDOUS WASTE MANAGEMENT POLICIES

The City of Hercules intends to achieve the goals and objectives outlined in Chapter 3.0. The City has developed the specific policies listed below in order to accomplish this intention.

The City of Hercules' policies with respect to hazardous materials and hazardous waste shall be:

- o To adopt appropriate administrative authority to monitor and enforce city ordinances for businesses and other hazardous waste users within the city limits of Hercules.
- o To designate the City Manager as the lead coordinator with each department (see chart on page 6) responsible for the achievement of specific hazardous waste management goals for the City of Hercules. The Department shall accomplish these management goals by working with designated county agencies including the Rodeo-Hercules Fire Protection District, County Planning Department and County Health Department.

- o To bring all city facilities into compliance with proposed hazardous waste management policies of this plan, and with other existing statutes and ordinances at the county, state and federal level.
- o To train city employees who handle or otherwise come in contact with hazardous materials or hazardous waste in the proper safety procedures for management and handling of these substances.
- o To establish an enhanced hazardous waste and materials data base, oriented toward land use issues and zoning ordinance enforcement, to be implemented by the Planning Department, which will incorporate information from businesses which hold City of Hercules business licenses.
- o To enhance information submitted by local businesses regarding the generation, storage, transport and disposal of hazardous waste within the city limits of Hercules upon application or renewal of city business licenses.
- o To encourage waste minimization by local businesses through source reduction, product substitution, development of alternative technologies, recycling or other effective means.
- o To assist with coordination of county or regionally sponsored technical assistance programs to small quantity generators and other industry regarding hazardous material handling and hazardous waste management.

- o To train current inspectors to recognize hazardous materials and hazardous waste management problems and to coordinate with fire department inspectors in order to ensure compliance with the Hercules Municipal Code and other applicable regulations.
- o To direct the City Attorney to enforce all applicable ordinances pertaining to hazardous waste generation, transport, storage and handling, and to adequately deter accidental or purposeful violations of these ordinances.
- o To encourage community participation in municipal household hazardous waste collection through educational and technical programs. Such programs might include distribution of educational materials, sponsoring educational events, arranging community hazardous waste collection days and investigation of potential for a permanent household hazardous waste collection facility, in accordance with the solid waste JPA.
- o To coordinate city actions with the Rodeo-Hercules Fire Protection District and other emergency response agencies. To train city personnel in the emergency response procedures in interagency agreements through establishment of an interagency emergency response task force for this purpose.
- o To appoint a person or committee charged with maintaining communication with other (neighboring) jurisdictions and arrange a mechanism for developing inter-jurisdictional waste management strategies for common problems involving the city and neighboring jurisdictions.

These policies would be implemented through specific programs. Each policy or group of policies serves as a mandate for establishment of a program or other set of actions which the City must establish in order to achieve an effective system of hazardous waste management.

4.4 PLAN RECOMMENDATIONS

Establishment of specific programs to achieve the goals and policies of this plan will allow the City of Hercules and its citizens to effectively control and regulate hazardous waste generation, treatment and disposal within the city jurisdictional limits. This Plan recommends that the following programs be enacted in accordance with the goals and policies listed above:

- o Establish and maintain a data base on hazardous materials handled, and hazardous waste managed within the City's sphere of influence (consistent with AB 2185 (1986)). The data base should contain information to facilitate land use decisions such as the permitting of new facilities which generate or use hazardous waste or materials and the proximity of development to hazardous sites as well as residential areas. This will encourage development of compatible uses and provide the City with mechanisms to develop appropriate regulatory guidelines and incident response procedures in these areas of the city.
- o Participate, in conjunction with appropriate County and State agencies, in monitoring programs for air and water which will adequately protect the health and safety of Hercules citizens from potential exposures to hazardous materials on a sustained basis and which will alert citizens to any incidents or short-term threats of exposure.

- o Work with the local business community to undertake and encourage a program of identifying waste minimization opportunities or procedures for local industry. Provide staff support to work with industry and accomplish these goals. The procedures developed should encourage source reduction, recycling, reuse and on-site treatment. Investigate the feasibility of developing such a program as part of regional program undertaken by a group of neighboring jurisdictions (west-county cities).
- o Enact a requirement for all generators or handlers of hazardous materials above a specified minimum (consistent with AB 2185 (1986) and AB 3777 (1989)) to provide the City with an on-file Hazardous Waste Business Plan and Risk Management and Prevention Plan. Generators and handlers subject to this requirement are those who generate or handle more than 55 gallons (liquid), 500 pounds (solids), or 200 cubic feet (gas at standard temperature and pressure) of hazardous materials annually. More detailed questionnaires regarding storage and handling of hazardous substances should be issued to each applicant for a City business license and issuance of the license should be contingent upon satisfaction of city requirements and ordinances pertaining to handling and storage of hazardous materials and waste.
- o The City should develop, in coordination with the Rodeo-Hercules Fire Protection District, a program to regularly inspect and/or monitor facilities which are determined to be or suspected of handling or managing hazardous waste or hazardous materials within the city's jurisdiction. Such inspection may be possible in conjunction with existing inspection programs.

- o Continue to work with other jurisdictions and establish lines of communication and programs for pursuing hazardous waste management on an area-wide basis, thereby solving mutual problems of inter-jurisdictional waste management.

Once the City has committed to developing the above programs, funding mechanisms will be required for achievement of continuing activity on each program.

5.0 TOPICS

This Chapter covers first the detailed information on current and projected hazardous waste generation in the City of Hercules based on shipping manifest data from the California Department of Health Services and information provided by Contra Costa County Planning and Environmental Health Departments. Small quantity generator information is based on business lists and categories provided by the City of Hercules. The remainder of the Chapter covers various aspects of hazardous waste treatment, storage and disposal facilities as mandated by AB 2948 (1986) and AB 1205 (1989).

To determine need for waste treatment, existing facilities are inventoried, followed by examination of the need for such facilities, effects of waste reduction on such needs and siting criteria for such facilities. The final sections of the Chapter deal with a variety of special topics including transportation and storage of hazardous waste, facility inspection and enforcement of regulations, implementation and emergency response procedures, existing contaminated sites and hazardous waste generated by small quantity generators and households.

5.1 CURRENT WASTE GENERATION

Hazardous waste within the city limits of Hercules (Figure 3) is generated primarily by two industrial facilities which deal with petroleum products, chemicals and biomedical products (Figure 4). The one large quantity generator is Pacific Refining Company. Bio-Rad Laboratories generates smaller quantities of waste, but does generate and handle flammable solvents as well as biological and low level radio active waste. Other small generators which have produced waste manifested on the DHS data base include the Mechanics Bank of Richmond Operations Center and the Caltrans District 4 Maintenance yard.

The substances and quantities of hazardous waste generated by these facilities and shipped off-site for treatment or disposal, based on DHS manifest data, is shown in Table 1 for the years 1986, and 1988. A brief description of the operations of these facilities follows in this section. The wastes from these facilities fall into a variety of waste categories which are discussed in detail below in Section 5.1.1.

Pacific Refining Company

Pacific Refining Company is a medium sized refinery with capability to produce fuel grade products from crude oil. The refinery generates air emissions which are permitted by the Bay Area Air Quality Management District (BAAQMD), effluents which are dischargeable directly to San Pablo Bay under the Company's National Pollutant Discharge Elimination System Permit (NPDES) and other effluents treated at the on-site sewage treatment plant (STP) prior to discharge. Process components at the facility include a crude unit, a vacuum unit, a catalytic refiner, a hydro-cracker, a stack gas concentration unit, boilers, cooling towers and the wastewater treatment facility.

Bio-Rad Laboratories

Bio-Rad Clinical Division is a facility located in the North Shore Business Park together with the Bio-Rad Laboratories corporate headquarters. The Bio-Rad Chemical Division is located in Richmond approximately 10 miles south of Hercules. Bio-Rad activities include radioactive materials research connected with biomedical/diagnostic test kits, testing and research using small quantities of flammable solvents and biological research including viral testing and associated biomedical technologies.

The Bio-Rad Hercules facility has two permits on file with the Bay Area Air Quality Management District (BAAQMD). One is an abatement permit for the use of HEPA equipment and the second is for use of ethanol spray disinfectant in an amount greater than five gallons annually. Radioactive wastes are permitted by the California Department of Health Service and are disposed of at approved off-site Class I facilities in Washington State (high level waste), held until half-life decay makes the material safe for sanitary landfill disposal (low level handling waste such as gloves and gowns), or concentrated using activated carbon and discharge of treated water to the sewer system as specified by State Permit (low level liquid waste). Other waste streams include solvent waste and biomedical waste which are discussed in detail in Section 5.1.1 below.

The Mechanics Bank of Richmond has its Operations Center in Hercules, where a large amount of document film developing is done. The resulting silver from photographic laboratory waste is diluted and discharged with wastewater to storm drains, and is thus not "shipped" off-site.

At the Caltrans District 4 Maintenance Yard, wastes include a diesel/asphaltic emulsion as well as waste motor oil. Total manifested waste quantities were reduced since some wastes were unnecessarily manifested as hazardous in 1988 (see Table 1).

5.1.1 Wastes Shipped Off-Site

Wastes shipped off-site by major industries within the city limits include both RCRA (wastes identified in the Resource Conservation and Recovery Act) and non-RCRA wastes:

- o API separator wastes from Pacific Refining Company (RCRA)
- o Bio-sludge wastes from Pacific Refining Company (non-RCRA)
- o Spent catalyst and miscellaneous wastes from Pacific Refining Company
- o Halogenated and unspecified solvent waste from Bio-Rad Laboratories

No known large quantities of hazardous waste are currently generated at facilities located outside of the city limits of Hercules, but within the City's sphere of influence. There are four facilities in this zone which do not have manifested waste streams according to the most recent DHS records (1988), however, these facilities may produce small quantities of waste. These companies are:

- o Unocal, Inc. (coke plant)
- o Asbury Graphite
- o Yellow Freight System
- o Loprest Company

The waste products from the two major industrial generators, Pacific Refining Company and Bio-Rad Laboratories, are the result of individual operations which are described briefly below. King Oil Company, an oil recycling operation, apparently ceased operations and generated hazardous wastes during the period 1976-1987.

Pacific Refining Company

Pacific Refining produces API-Separator sludge at approximately 150 dry tons annually. This includes KO48 and KO51 wastes which are both federally classified as hazardous wastes under RCRA (Resource Conservation and Recovery Act). Actual annual tonnages are shown in Tables 1 & 2. In addition, Pacific Refining produces non-RCRA bio-sludges at approximately 130-150 tons per year (see Tables 1 & 2). These sludges result from processing at the on-site wastewater treatment plant. These sludges are dewatered on-site with the filtrate being reprocessed by the sewage treatment plant (STP). The RCRA and non-RCRA solid waste is then shipped to the Class I disposal facility at Kettleman Hills. Due to the state ban on landfills accepting untreated hazardous waste, the RCRA "K" (KO48, KO51) wastes may have to undergo incineration in the future or be treated or recycled on-site.

Bio-Rad Laboratories

Bio-Rad Laboratories generates several levels of State permitted radioactive waste as discussed above. State manifested waste includes approximately 1.12 tons per year of unspecified solvent waste. In addition, the facility sterilizes (auto clave) and disposes of biomedical waste through shipment to the Richmond landfill or normal trash pickup depending on material type and quantity.

Other Sites

The other sites inside and outside the City have been discussed in summary form above. Contaminated sites are discussed further under Section 5.2.4. Small quantity generators are shown in the waste generation tables (Tables 3 and 4).

5.1.2 Wastes Managed On-Site

The two major industries in Hercules both have some programs to manage portions of their wastes on-site. Pacific Refining dewateres its RCRA and non-RCRA wastes returning filtrate to the Sewage Treatment Plant (STP) and shipping only dry solid waste off-site for disposal. Bio-Rad Laboratories uses auto-claving and radioactive decay to reduce the amount of their waste streams requiring special off-site disposal methods.

Some small quantity generators may treat wastes on-site. Details of this treatment are not available on a generator-specific basis, however, oil recyclers and other recycling or mobile treatment volume reduction services are the most typical forms of on-site treatment for these generators.

5.1.3 Small Quantity Generators

Small quantity generators are defined by the California Department of Health Services (DHS) as those generators whose monthly production of hazardous waste is less than 1,000 kilograms (approximately one ton). For the purposes of this report, the definition shall be those generators who produce less than one ton per month or approximately twelve tons annually.

Small quantity generators mainly produce wastes from their commercial or industrial processes in quantities too small to warrant economical on-site treatment. The bulk of these wastes are shipped to commercial recyclers, treatment or disposal facilities outside the City of Hercules.

Table 3 is a summary of the waste generation by waste type and waste group (with the exception of waste oil) from small businesses (small quantity generators or SQG) within the City of Hercules.

Table 4 is a summary of waste oil generated by small quantity generators. Table 4 is categorized according to the total number of firms per group, the waste oil generation factor and total volume of waste oil. Further information on calculations used in compiling Table 4 is contained in Appendix A.

The estimated amount of hazardous waste generation from small businesses was calculated by utilizing the Department of Health Services "Guidelines for the Preparation of Hazardous Waste Management Plans" (DHS 1987a). The Methodology used was the "No Survey Method" modified by utilization of available lists of permitted businesses within the City. This methodology is considered valid since DHS reports that the waste streams associated with small quantity generators is basically consistent throughout the nation.

The use of the "No Survey Method" for this report involved:

- o Identifying the number of businesses within the City of Hercules and categorizing the businesses into the appropriate "industry groups" as specified by the DOHS Technical Reference Manual (DHS 1987b)
- o The quantity of hazardous waste generated by each industry was calculated by multiplying the number of companies within each group by the U.S. Environmental Protection Agency generation factors
- o The small quantity waste generation was then reported as the percent of total waste for each waste type

The data base utilized for small quantity waste generation was established through the use of a business license list supplied by the City of Hercules (March 1990). The 238 operational small

businesses were categorized, by the City of Hercules, into 22 major SIC groups. Businesses not readily classifiable (33 businesses) were placed into a miscellaneous grouping (group # 20). The latter category were not included in the waste generation calculations since their waste streams could not be readily identified.

Additionally, 38 businesses were not included in the waste generation calculations since their business license had expired and the business was assumed non-operational.

A total of 238 small businesses were utilized in the waste generator calculations. The small quantity generator data base information is detailed in Appendix A. The City of Hercules reviewed the business type and categorized the business group into the appropriate SIC code group. The data base may be limited due to the fact that the SIC code was assigned to the small business rather than using the State's SIC designation based on information supplied by the business.

5.1.4 Household Wastes

Households produce hazardous waste through the use of products which contain hazardous substances or materials. Such products include:

Paints	Batteries
Solvents	Pesticides
Thinners	Photographic Chemicals
Pool Chemicals	Auto-body Products
Cleaners	Waste Oil

and similar materials. Such wastes are produced in small quantities by most households, however, the cumulative effect on a landfill or other disposal center may become significant, particularly over a long period of time.

According to the DHS, the average household produces 7.5 pounds of hazardous waste per year. The Hercules General Plan Housing Element (Sedway and Associates 1990) has identified 16,500 residents in 5,300 occupied households. Therefore, the City of Hercules generates approximately 20.0 tons of household hazardous waste per year. This quantity is further classified in Table 5. The data was calculated by using DHS methodology which is based on a study of the composition of hazardous waste within a landfill. It has been estimated that in a city of 20,000 residents, .75 tons of toilet bowl cleaner, 2.75 tons of liquid household cleaners and .69 tons of motor oil are discharged into city drains each month.

Disposal of these materials and wastes into the sanitary landfill is illegal. Currently the City's solid waste stream is serviced by Richmond Sanitary Service. The final waste disposal is at the Richmond Sanitary Landfill. Once the landfill is full, the waste will be hauled to a transfer station with the final waste disposal at a remote site within the County.

5.1.5 Contaminated Sites

Known contaminated sites in Hercules are generally contaminated from past industrial practices. Within the City of Hercules, contaminated sites included in the U.S. Environmental Protection Agency CERCLIS Data Base and the State Department of Health Services Data Base (USEPA 1989; DHS 1989a,b) are shown in Table 6. The location of the major sites are shown in Figure 9.

The contaminated sites within the city limits are primarily contaminated due to past land use activities at the Hercules Powder Works Company site. These sites are under cleanup monitoring and enforcement by the State Department of Health Services. Portions of the sites have been cleaned up during the past few years and

soon may be deleted from the list. The Final HWMP will contain these updates.

5.1.6 Designated and Non-Hazardous Waste Facilities

There are no licensed Treatment Storage or Disposal (TSD) facilities within the City for the disposal of designated waste (special state category for certain hazardous wastes which are of less threat to human health or the environment than those classified as "hazardous wastes"). Municipal solid waste is managed by Richmond Sanitary and transported to a Class III landfill in Richmond.

5.1.7 Wastes Imported and Exported

Most industrial waste generated within the city limits is exported to outside facilities with the ability to recycle, treat, store or dispose of the waste. Wastes classified as hazardous and extremely hazardous which are not amenable to treatment or recycling are transported to the Class I Waste Disposal Facility at Kettleman Hills, California managed by Chemical Waste Management, Inc; or, in the case of Bio-Rad, wastes are shipped to the Class I facility in eastern Washington State.

5.2 PROJECTED WASTE GENERATION

This section projects generation of hazardous waste in the year 2000 based on current waste generation and assumed population increases within the City. Several scenarios are given, one depending on the achievement of waste minimization goals for current industries and another based on implementation of various proposed permits now before the City. The estimated generation of hazardous waste in the City for the year 2000 may range from 643.7

to 1,189.2 tons per year (based on industry projections) as shown in Table 7.

5.2.1 Large Industrial Producers

Large industrial hazardous waste producers will continue to produce the bulk of Hercules hazardous waste into the year 2000 under all scenarios. Large industries, designated as those that produce more than 1.0 tons per month of hazardous waste, presently include only Pacific Refining Company and Bio-Rad Laboratories.

5.2.2 Small Quantity Generators

Small quantity generators will remain a small but growing component of hazardous waste generation into the year 2000. An inventory of the City's small quantity generators shows that approximately 238 businesses produce hazardous waste. Some SQG's produce or use extremely hazardous substances as defined in Health and Safety Code Section 25500 et seq. Numerous other facilities are likely to use hazardous materials or produce designated waste.

The amount of hazardous waste estimated to be generated by SQG's in the year 2000 was calculated by applying a population adjustment factor of 14.0 percent to current figures. A scenario involving application of waste minimization was then calculated as an adjustment on these figures, using DHS waste minimization estimates (Department of Health Services 1987a). Projections of small quantity generator hazardous waste generation in the year 2000 are summarized in Table 8 as based on details shown in Appendix A, Table A-2.

5.2.3 Household Hazardous Wastes

Household hazardous waste will rise due to the increase in population if waste reduction measures are not effectively implemented. Reductions in current levels of generated household hazardous wastes are possible. Effective collection days, recycling and alternative materials can achieve reduction in the total quantity of hazardous waste generated and disposed. To achieve this reduction, the program must receive citizen support and participation.

The City of Hercules has a projected population growth rate of 14 percent between the year of 1990 and 2000 (Sedway and Associates 1990). This growth rate is consistent with the growth rate of Contra Costa County. If a growth rate of 14 percent occurs, the total number of occupied households will increase to 6,048 in the year 2000. The estimated amount of household hazardous waste generation in the year 2000 is calculated by multiplying 7.5 pounds by the projected number of households; therefore, the projected amount for the year 2000 is 22.7 tons. This data is shown in Table 8.

5.2.4 Contaminated Sites

Contaminated hazardous waste sites have been documented by the State of California on the Bond Expenditure Plan List, "Cortese List" and other documentation of known hazardous sites. Most of the known sites within the city limits of Hercules result from past land use practices and historical industrial usage. The sites are listed in Table 6.

Cleanup of contaminated sites has considerably added to the quantities of manifested waste listed in DHS data (See Table 1). Large annual fluctuations in waste amounts generally indicate that

some site cleanup has occurred. Such cleanups have added waste types including metals, asbestos and contaminated soils and similar substances to the data during the period 1986-1988. Projections of cleanups from contaminated sites to the future are difficult since waste cleanups are usually relatively short-term events. Since some contaminated site cleanups have already occurred and the two known sites are listed for remediation before 1995, Table 9 projects wastes from contaminated sites as zero in the year 2000.

Two large listed contaminated sites within the city limits are owned by Hercules, Inc., and Hercules Properties Ltd. The sites are discussed below.

Hercules, Inc.

This 41 acre site is located near the corner of San Pablo Avenue and Sycamore Avenue, and was once a portion of the Hercules Powder Work Company site. Various munitions and explosives were manufactured and stored at the site from the early 1900's to the late 1950's. The primary contaminants of concern found in the soil on-site include explosives and metals: 1) trinitrotoluene (TNT), 2) dinitrotoluene, 3) dinitrobenzene and 4) lead.

The primary threats to public health and the environment are associated with direct contact with the contaminated soil, and inhalation of contaminated dust particles by nearby residents. Remedial actions have been implemented and are currently ongoing at the site. One of the interim remedial measures (IRM's) included excavation and off-site disposal of lead contaminated soils. Currently, a 6-month pilot test to determine the effectiveness and rate of biodegradation is being conducted.

Little League Field

The Little League ball field was part of the site owned by Hercules, Inc. Contaminated soil was removed from the site in 1986. Continuing cleanup measures have included aeration and biodegradation of soil containing low level contamination on nearby land owned by Hercules Ltd.

Hercules Properties, Inc.

This 105 acre site at 560 Railroad Avenue is an inoperable nitroform fertilizer plant located on a portion of land previously used by the Hercules Powder Works Company. The site was used for manufacturing and storage of nitrogen fertilizers from the 1950's to the 1970's. The primary contaminants of concern identified in soils at the site include: 1) concentrated acids, 2) caustics, 3) heavy metals, and 4) asbestos.

The primary threats to public health and the environment are associated with direct contact with the contaminated soil, and inhalation of contaminated dust particles. Several phases of remedial investigation have been completed, and additional investigations are proposed to begin in July 1990.

5.2.5 New Waste Streams

New waste streams are indicated in Tables 8 and 9 in terms of increases in waste generation between 1986 and 1988. Further increases in waste streams are possible from existing industry and from new industries (see Section 5.2.6 below). Data on projected new waste streams from existing industry have been based on interviews of Pacific Refining Company (Knight, personal communication) and Bio-Rad Laboratories (McAll, Young, personal communication) and are included in Table 9. Potential new waste

streams for both facilities depend on general business growth. In addition, increases in present wastes streams depend on a potential facility expansion at Pacific Refining and a potential relocation to Hercules of the Bio-Rad chemical division.

5.2.6 Wastes from New Industries

There are no current applications for new major industries projected to locate within the Hercules city limits. Both Bio-Rad and Pacific Refining are currently discussing, with the City, potential plans for expanding new facilities (Garrett, personal communication). Small research and development firms, service businesses, gasoline service stations, drycleaners and other small quantity generators are expected to locate in the City during the 1990's in accordance with the City's plans for growth and development (City of Hercules General Plan, 1990). These facilities are expected to individually generate only relatively small amounts of hazardous waste.

Three areas within the City of Hercules are shown on potential siting maps for hazardous waste treatment, storage or disposal (TSD) facilities in the Contra Costa County Hazardous Waste Management Plan (Contra Costa County 1989). The City believes that county and city siting criteria coupled with buffer zones, health risks and other environmental factors make considerable portions of these potential areas unsuitable for use by most TSD facilities. Any waste streams from TSD's or other facilities which might apply for permits in these areas would be facility specific and cannot be projected at this time.

5.3 TSDF FACILITY INVENTORY

Currently there are no commercial treatment, storage or disposal facilities for hazardous waste within the Hercules city limits.

Previous operations in Contra Costa County included IT Vine Hill and Acme Landfill which previously accepted RCRA wastes and substances regulated as hazardous under Title 22 of the California Code of Regulations (CCR). These facilities are located approximately 15-20 miles east of Hercules and neither facility is currently active as a disposal facility, although the County currently operates a solid waste transfer station at the Acme Landfill site.

5.4 TSDF NEEDS ANALYSIS

The need for Treatment, Storage or Disposal (TSD) facilities in Hercules depends strongly on the interpretation of need for the City to process wastes other than amounts equivalent to those it produces. Industry within the City presently generate a relatively small amount of waste which is probably not easily or economically treatable except through expanded on-site treatment of at a larger regional facility.

The Contra Costa County Hazardous Waste Management Plan shows only three areas which meet potential siting criteria within the City of Hercules. These are a light industrial area, located between Interstate 80 and San Pablo Avenue, the Pacific Refinery Company site and the original site of the Hercules Powder Works Company (see Figure 7). Other areas of the City are precluded by the County's TSDF Siting Criteria.

The City of Hercules has recognized a need to pursue industrial and commercial growth in order to balance its residential community with an appropriate amount of jobs and services. The City's Economic Development Strategy Plan (City of Hercules 1990b) cites the need for strong economic development to be balanced against conservation and protection of environmental concerns. This report also recognizes that industrial development may lead to the need

for consideration of additional hazardous waste management issues. The City intends to deal with such issues for new facilities primarily through focusing on waste minimization and on-site treatment requirements when appropriate.

Table 10 shows a capacity needs analysis for the City of Hercules based on the assumption that the City should treat an amount of hazardous waste equivalent to that which it generates. The needs analysis shows that no hazardous wastes are treated or disposed within the City, and that 600-800 tons of hazardous waste generated (from the present to the year 2000) annually within its boundaries will be transported out of the county for treatment or disposal. Table 10 has been constructed based on small quantity generator and household hazardous waste information supplemented by DHS records and contacts with the City's large generators.

The large generator industry within the City does not treat wastes on-site, although Pacific Refining Company significantly reduces the weight and volume of its STP wastes through dewatering, filtration and sludge separation. Pacific Refining exports 300-400 tons per year to sites outside the City. This industry is expected to increase waste disposal to potentially 250 tons per year on-site and 550-1,000 tons per year off-site by the year 2000 if proposed expansion project is approved. On-site treatment/disposal capacity is presently non-existent, but could increase to 250 tons/year if Pacific Refining perfects a contemplated treatment/recycling-recovery project for waste which is currently shipped to off-site hazardous waste facilities. The proposed project would reduce waste toxicity through on-site processing.

The Richmond Landfill is expected to continue collecting municipal waste until full at which time solid waste will be shipped to a transfer station en route to a permanent permitted facility. As Contra Costa County and west-county cities further implement their

household hazardous waste programs, hazardous waste from these facilities are expected to be separated from other municipal waste and shipped to appropriate treatment/disposal facilities outside the County. Hercules' portion of household hazardous waste will increase slightly to up to 22.7 tons per year in the year 2000 without waste reduction programs.

5.5 TSDF CAPACITY EXCESS OR SHORTFALL

There are currently no on-site or off-site TSD facilities within the City of Hercules. The need for TSD facilities, defined as equivalent to the amount of hazardous material the City produces shows a relatively small current shortfall of TSD capacity within the City, based on two large quantity generators, small quantity generators and household hazardous waste.

In the year 2000 the presence of an excess or shortfall will be partly determined by hazardous waste reduction and on-site treatment programs that may be implemented at the major generators facilities and by the addition of waste treatment or recycling programs for small quantity generators and households.

5.6 HAZARDOUS WASTE REDUCTION

Hazardous waste reduction efforts may strongly affect the quantity of excess or shortfall TSD facility capacity. If all major facilities can process or significantly reduce their own waste or implement effective on-site treatment programs then the TSD facility need is only for processing hazardous waste from small quantity generators and households, plus whatever surplus waste cannot be treated by those major facilities.

Hazardous waste reduction in facilities outside Hercules would reduce the overall need for hazardous waste TSD facilities. The

extent of such potential reduction will be limited by institutional, physical and technical constraints. Projected reduction through implementation of source reduction and recycling programs is shown in Table A-2.

5.6.1 Projection of Hazardous Waste Reduction; Impacts on Facility Siting Needs

Table 8 shows estimated potential for hazardous waste reduction from SQG's and households based on the DHS Technical Reference Manual (DHS 1987) and information from local industry. This waste reduction will decrease the shortfall of TSD capacity, although projection data is presently insufficient to calculate the exact difference. Both Pacific Refining and Bio-Rad Laboratories plan to expand existing facilities and to reduce hazardous waste through waste management and possibly some forms of on-site treatment, recycling or resource recovery. The projected reductions cannot be closely quantified at this time (Knight, McAll, personal communication). This change will reduce the local need for siting new TSD Facilities.

Household hazardous waste reduction has been recently mandated by the State in AB 939, the integrated waste management bill. Reduction of solid hazardous waste and reduction of all solid waste by 50 percent in the year 2000 is required under this law. We have used the 50 percent volume reduction requirement as applying to household hazardous waste in Table 8 in order to generate projections to the year 2000.

Regional and statewide needs for TSD facilities will probably remain during the next decade. The decision regarding the relative perspectives of local versus regional or statewide needs as to the siting of TSD Facilities has yet to be resolved.

5.6.2 Barriers to Waste Reduction

Potential barriers to hazardous waste reduction include the following:

- o Technical barriers - impede a firm's ability to develop, evaluate or implement waste reduction methods. These barriers include 1) lack of information on waste reduction methods, 2) lack of in-house expertise to evaluate and implement waste reduction and 3) absence of readily available technologies.
- o Financial barriers - prevent a firm from undertaking a waste reduction project because of funding inadequacies.
- o Institutional barriers - can be either regulatory constraints or lack of awareness and commitment at the decision-making level in companies.
- o Physical barriers - such as lack of space on the property of the waste generator to install a facility or process, can impede waste reduction.

These barriers can often be overcome at the local government level through programs of communication and education on available hazardous waste reduction techniques and technologies. Often a joint program between local government and industry has proven highly effective at overcoming these barriers.

5.6.3 Local Waste Reduction Programs

The City presently has no in-place hazardous waste reduction program, however, one of the programs recommended by this plan would be to implement such a program as part of a JPA. Certain industries have already implemented waste reduction programs. Pacific Refining reduces its API Separator sludge and bio-sludge through dewatering, filtration and sludge separation processes. Bio-Rad Laboratories reduces biomedical hazardous waste through sterilization and its low-level radioactive waste through storage and subsequent half-life decay.

5.7 SITING OF HAZARDOUS WASTE FACILITIES

Section 25135.1 (d)(6) of the California Health and Safety Code specifies that each Hazardous Waste Management Plan shall include:

- o an identification of existing hazardous waste management facilities which can be expanded to accommodate projected needs
- o general areas or specific sites for new hazardous waste management facilities determined to be needed

In lieu of specific site identification, the HWMP may identify siting criteria to be used in selecting sites for future hazardous waste management facilities and should designate general areas where such criteria may be applicable. These requirements were formulated for the County Hazardous Waste Management Plans and it is not clear whether the intent of the legislation was to apply this criteria directly to cities where the amount of land available and existing land use may not lend itself to development for hazardous waste management facilities.

5.7.1 Intent

Siting criteria have been developed by the State Department of Health Services for the siting of hazardous waste management (TSD) facilities. The guidelines specify that individual sites to be established or selected by these criteria should at the time of the designation of a site and proposed new facility be required to complete a Risk Assessment and California Environmental Quality Act (CEQA) Evaluation for the proposed site. The criteria listed in Section 5.7.2 below are based on DHS requirements with minor modifications to ensure compliance with the Contra Costa County HWMP and City Code requirements.

Figure 6 shows City of Hercules Zones and Land Uses according to the Hercules Municipal Code, Title 10 (City of Hercules 1987) and the Hercules General Plan (City of Hercules 1990). Figure 8 shows Sensitive Areas, developed to include both public health and environmental considerations, which are inappropriate for TSD facility siting. These areas are based in part on the Siting Criteria discussed in Section 5.7.2 below and in part from specific considerations from the City of Hercules Municipal Code and General Plan.

5.7.2 Siting Criteria

The DHS siting criteria indicate that most TSD facilities, specifically those which are aboveground and similar in nature to any industrial plant can be sited in areas zoned for light or heavy industry. The guidelines also indicate that companies which produce hazardous waste may wish to locate near treatment plants in order to take advantage of services offered by such facilities. The DHS encourages the establishment of industrial tracts for such companies in order to minimize risks associated with the transportation of hazardous waste.

The DHS guidelines for HWMPs indicate that any existing hazardous waste treatment, storage or disposal facilities which do not meet the siting criteria shall be considered existing non-conforming land uses and consistent with the Hercules HWMP. These facilities are not subject to a finding with consistency with the HWMP when they are being reviewed for modification, enlargement or renewal of a permit from DHS unless a risk assessment prepared pursuant to the DHS procedures demonstrates a significant adverse impact on human health or the environment due to the continued operation of the facility. There are presently no off-site hazardous waste treatment facilities in Hercules. The only existing facilities in Hercules are on-site waste reduction and storage facilities at Bio-Rad Laboratories and Pacific Refining Company.

The DHS and Contra Costa County criteria have been reviewed by Hercules and modified or supplemented based on particular needs of and issues important to the city, based on local conditions and known citizen concerns. These criteria include both state and county criteria in addition to a few specific criteria and modifications developed by Hercules to apply to the City's specific concerns. The criteria are as follows:

SPECIFIC SITING CRITERIA

1) HIGH HAZARD AREAS:

(Those areas in which human or animal life could be jeopardized by fugitive or accidental emissions).

SEISMIC AREAS: No facility should be placed within 200 feet of an active or recently active fault.

FLOODPLAINS: Repositories may not be located in areas subject to 100 year flood events. Other facilities may be built in areas subject to 100 year flooding if protected by engineering solutions such as berms, raised foundations etc.

WETLANDS: No facilities shall be located in wetlands (marshes, swamps or bogs as defined).

HABITAT OF ENDANGERED SPECIES: No facilities should be located within critical habitat areas as defined in adopted general regional or state plans.

UNSTABLE SOIL: Facilities located within these areas should have engineered design features to assure structural stability. This area includes steep slopes and areas subject to liquification and subsidence due to natural causes.

MAJOR RECHARGE AREAS FOR AQUIFERS

Repositories should be prohibited within areas known or suspected to be supplying principal recharge for regional aquifers. Other facilities should be discouraged from locating in these areas. If so located, these facilities should provide properly engineered spill containment features, inspection measures and other environmental controls.

2) PUBLIC SAFETY:

DISTANCE FROM RESIDENCES: Repositories must provide a buffer zone of 2,000 feet unless owner demonstrates to DHS and the City that such a buffer is not required to protect public health and safety. All other facilities shall prepare a risk assessment which shall consider the need for buffering residences and other sensitive areas.

DISTANCE FROM IMMOBILE POPULATIONS: Risk assessments shall be performed at the time of permitting to determine the need for buffer zones between the facility and immobile populations.

PROXIMITY TO
MAJOR
TRANSPORTATION
ROUTES

Repositories should have good access to major transportation routes but may have to be more distant from waste generation sites due to requirements for larger land areas. Other facilities should be located so as to minimize distance from major transportation routes and designed to accommodate heavy vehicles. No facility should be so close to transportation corridors as to block access during an upset condition or other emergency. Road networks leading to major transportation routes should not pass through residential neighborhoods and should be demonstrated to be safe with regard to accident rates, excessive traffic and road design and construction.

BUFFER ZONES

A buffer zone will be established precluding development of facilities within 2,000 feet of major highways or arterials, residential neighborhood, immobile population or incompatible land use as defined by the Land Use Element of the City General Plan.

AIR EMISSIONS

TSD facilities or repositories potentially have significant hazardous air emissions shall be required to prepare a detailed Risk Assessment and to mitigate all health risks. Such facilities shall be discouraged from locating up wind from residential areas.

3) PHYSICAL LIMITATIONS OF THE SITE AREA:

PERMEABLE
STRATA AND
SOILS

Repositories shall conform to the requirements of the State Water Resources Control Board. All other facilities should have engineered design features including spill containment and monitoring devices.

NONATTAINMENT
AIR AREAS

Siting should not be precluded from these areas unless risk assessments performed as part of permitting, considering the physical and chemical characteristics of the specific types of wastes that will be handled and design features of the facility, show that emissions will significantly contribute to nonattainment of standards, that such emissions cannot be mitigated and that the emissions of the facility are significantly greater than those associated with transportation of hazardous waste out of this area.

PSD AIR AREAS Transfer and Storage Facilities could be permitted in Prevention of Significant Deterioration (PSD) areas, if they are necessary to handle potentially hazardous wastes generated by visitors or residents in recreational or cultural facility areas which are in the PSD zone. For other facilities, unless an analysis for a specific proposed facility shows that air emissions cannot be adequately mitigated, other facilities can be established in PSD zones. These facilities, however, cannot be located near or within National Parks, wilderness and memorial areas and other similarly dedicated areas.

PRIME
AGRICULTURAL
LAND Prime agricultural lands under California law may not be used for urban purposes unless an overriding public need is served. When siting hazardous waste management facilities in these areas, such overriding need must be demonstrated.

DEPTH TO
GROUNDWATER Repositories shall meet siting requirements of the State Water Resources Control Board. Other facilities may be located in high groundwater areas if the engineered design of the containment structure is capable of withstanding a failure because of geologic or soil failures which may arise.

4) LOCATION-SPECIFIC CRITERIA:

PROXIMITY TO
PUBLIC
FACILITIES Potential adverse impacts due to proximity to public facilities should be considered and appropriately mitigated through the risk assessment and design features. Public services including water and sewer service should be available where TSD facilities are constructed.

PROXIMITY TO
WASTE
GENERATION
STREAM All TSD facilities except repositories should be located close to the points of generation in order to minimize transportation risks.

INDUSTRIAL,
COMMERCIAL AND
SPECIALLY
ZONED LANDS Hazardous waste management facilities (other than residual repositories) are basically industrial facilities and should be sited in industrial zone. Facility siting is not limited to these zones if special zones are created.

RECREATIONAL, CULTURAL OR AESTHETIC AREAS	Facilities other than low volume Transfer and Storage Facilities should not be permitted in these zones.
MINERAL RESOURCES AREAS	No Facilities should be sited so as to preclude extraction of minerals necessary to sustain the economy of the State.
OTHER LANDS	Military lands are not suitable for the establishment of public TSD facilities according to Department of Defense policies. Other state or federal lands may be suitable, as outlined by the foregoing criteria.

5.8 TRANSPORTATION

Transportation of hazardous waste and materials presently occurs on all major transportation corridors in and near the City of Hercules. Both rail transport through the City via the Southern Pacific Railroad and Atcheson-Topeka and Sante Fe tracks and truck transport to major industries and small quantity generators within and near the city via Interstate 80, State Highway 4 and City streets are the result of commercial/industrial operations which require these materials (Figure 5).

The Southern Pacific Railroad and Atcheson-Topeka and Sante Fe tracks pass through the City along the San Francisco Bay shoreline and north of the downtown area respectively (Figure 5). Railcars of fuels, spent refinery wastes, solvents, acids and other materials are periodically sided along the tracks (along the shoreline and near State Highway 4) and trains carrying similar materials pass through periodically en route to local industries or points near the City. Truck traffic of hazardous materials and waste is particularly heavy on Interstate 80 and State Highway 4.

5.9 INSPECTION, TECHNICAL ASSISTANCE AND ENFORCEMENT

The City of Hercules or an appropriately constituted JPA shall develop and maintain a program for technical assistance, inspection and enforcement of hazardous waste management objectives contained in this plan. The City attorney shall be charged with ensuring that appropriate enforcement procedures are carried out against parties who negligently generate, store, spill or dispose of hazardous wastes or materials in such a manner as to endanger human health or the environment. The City or JPA in coordination with emergency services responders shall develop procedures for dealing with any such incident in terms of emergency response, cleanup and assignment of liability and costs to the responsible parties.

5.10 ORGANIZATIONAL RESPONSIBILITIES FOR IMPLEMENTATION

Primary responsibility for implementation of the Hazardous Waste Management Plan shall lie with the City Manager who will oversee city departments and coordinate with other agencies. Individual city departments shall implement assigned components as shown in the chart on page 6. Access to the data base will be given to all applicable departments and emergency response agencies serving the city. The Department of Public Works shall be responsible for all hazardous waste management activities at City facilities including compliance with handling and storage regulations.

5.11 EMERGENCY RESPONSE PROCEDURES

The City of Hercules and other west-county cities (Pinole, San Pablo, Richmond, El Cerrito) have been involved in a three year effort which formed an emergency response Joint Powers Authority (JPA) for dealing with mutual emergency response issues. The

cities have developed and adopted a state approved multi-hazard plan which includes dealing with toxic spills. The JPA has also accomplished:

- o Specific scenario training and operation of the Emergency Operating Center.
- o Close coordination between the cities and emergency responders (Rodeo-Hercules Fire Protection District, City Police, City Public Works Department).
- o Regular training of police and fire department in toxic substances response.
- o Creation of a HAZMAT Team in West-County, located at the Richmond-Hilltop Fire Substation.

The City of Hercules intends to continue working as part of the West County Emergency Response JPA on these issues. Emergency services responders utilize the County's Area Plan for Emergency Response which outlines duties and responsibilities of all responders.

The City has, in coordination with Rodeo-Hercules Fire Protection District, implemented a data base indicating the presence of hazardous materials handled, and hazardous wastes generated at any given site within the City subject to a business license requirement (much of this data is already on file from business plans specified by AB 2185). The minimum reporting quantities are 55 gallons of liquid, or 500 pounds by weight, or 200 cubic feet of compressed gases. Sources of information that may contribute to the development of the data base include the following sources:

- o Biennial reports filed with California Department of Health Services and the U.S. Environmental Protection Agency every March 1 on the even numbered years.
- o SARA, Title III reporting information required from sections 302 and 313 (provided to the "Administering agency" and local Fire Department).
- o California business plans as required per AB 2185 and amended by AB 2187 and AB 2189 (currently collected by Contra Costa County Environmental Health Division of the Health Services Department). These data are provided by the County to the City and the Rodeo-Hercules Fire Protection District under an existing Memorandum of Understanding (MOU).
- o Review and evaluation of current business license applications and subsequent revisions for future use.
- o Independent surveys from those industries and businesses currently located within the city limits.

This information, once collected, would be usable for reference material by the Rodeo-Hercules Fire Protection District, city police and other appropriate emergency response agencies and personnel if a chemical emergency incident was to occur. Effective emergency response procedures involve the input and planning from those agencies directly involved with administering and assisting any incidents. The primary objectives of emergency response planning should be to first protect human health, second the public, third the environment and forth, property. Emergency response procedures should serve the City's interests in the above four areas as a result of coordinated plans and policies with both governmental agencies and private industry support.

Some emergency response resources may be provided to the City from private industry through a contractual arrangement. The City receives copies of the "Hazardous Material Release Response Plans" and inventory programs from those current businesses in Hercules city limits from Contra Costa County Environmental Health Division of the Health Services Department (HSD). HSD is the administering agency and recipient of the Business Plans (per AB 2185) from industry that include:

- o facility emergency response procedures to incidents
- o locations, types, and amounts of hazardous materials
- o handling procedures for all such materials

This information can be applied to better enable the City to identify and evaluate those potential emergency response incidents that could occur, and what appropriate procedures the City may implement to manage such occurrences.

5.12 STORAGE REGULATIONS

The City will develop guidelines for storage of hazardous materials and hazardous waste applicable for industries or businesses that handle hazardous materials and/or accumulate hazardous wastes. The Uniform Fire Code (UFC) has promulgated guidelines for building design and construction to hazardous chemicals, along with state and federal regulatory requirements that specify the proper labeling, marking and containment specifications. The City may wish to coordinate with fire inspectors in order to ensure that local businesses are meeting all city hazardous waste requirements.

These regulatory requirements are currently enforced by the U.S. Environmental Protection Agency (EPA), the California Department of Health Services (DHS), and Contra Costa County Health Services

Department (HSD) through a Memorandum of Designation (MOD) entered into in 1983, with the State of California (DHS 1983).

Facility managers should be informed that they are required to separate incompatible hazardous materials/wastes and place both materials/wastes in containers in designated areas that do not present a fire hazard, reactive hazard, nor potential threat to human health, public health or environment. Part V and Part VIII of the UFC regulates the use and storage of hazardous substances used in special processes and several classes of hazardous chemicals not otherwise covered in the UFC, which are highly flammable, or which may react to cause a fire or make a fire especially difficult or dangerous to fight.

The Western Fire Chiefs Association amended Part VIII, Article 80 in 1987 which established storage, secondary containment and monitoring requirements for all classes of hazardous materials. This article also requires hazard identification signs for first responders and development of procedures for chemical spill responses.

In 1984, the Cortese and Sher Assembly Bills required the registration and permitting of nonexempt underground tanks containing hazardous materials. The Environmental Health Division of the County Health Services Department (HSD) is the local agency administering this program. The City should develop a parallel data base that identifies and list all known underground storage tanks (UST) in the city limits and regulatory states.

5.13 CONTAMINATED SITES

The City should identify, on the Hazardous Waste Data Base, the location and type of each contaminated site within the city limits or within 1.0 miles of the city limits which may affect city

property through leaching, air emissions or other processes. Known contaminated sites can be preliminarily identified from lists of sites published by the federal and state government agencies responsible for their supervision throughout the monitoring and cleanup (remediation) process.

Site lists consulted to identify known contaminated sites in Hercules sphere of influence include the Environmental Protection Agency's National Priority List (NPL) and CERCLIS data bases, the State Bond Expenditure Plan List, and the "Cortese List" of known toxic sites (U.S. EPA 1989, DHS 1989a,b). In addition, the City has identified known contaminated sites within the city limits using unpublished data files from Contra Costa County Planning Department (Contra Costa County, unpublished data). All of the data bases overlap to some extent with the others.

Contaminated sites identified from these lists are shown in Figure 9. There are a total of 2 listed sites within the city limits which have resulted from past land use practices. These sites are monitored by the State Department of Health Services and are currently being characterized in preparations for site cleanup, or have implemented cleanup action (Hercules, Inc. and Hercules Properties, Inc. sites). The City of Hercules tracks progress by DHS and the site owners in meeting cleanup schedules and requirements.

More major sites within 10 miles of the City include 5 listed State Bond Expenditure Plan Sites. These are shown in Table 6.

5.14 SMALL QUANTITY GENERATORS

In 1989, Small Quantity Generators produced approximately 191.63 tons of hazardous waste within the City of Hercules. A breakdown of the EPA Waste Types and California DHS Waste Groups are shown

in Table 3. Waste oil accounts for 48.67 tons as shown in Table 4 (based on DHS "No survey method").

Waste oil and certain other hazardous waste types are often collected by route haulers who operate from another jurisdiction. These haulers report and manifest their waste from their own location which may be outside the City of Hercules or outside Contra Costa County, since many such haulers service multi-county areas. Since small quantity generators often lack the technical knowledge and economic resources to manage their own wastes, these haulers provide an important source of waste recovery. The true number and type of route haulers in Hercules is not presently known; therefore, the waste oil and similar waste types generated by small businesses was estimated using the DHS "No Survey" methods for this report.

In an attempt to accurately assess the types, quantities and disposal methods of hazardous waste generated by small businesses, a SQG data base with accurate SIC code groups should be developed by the City or cooperating County agencies. The data base could identify the actual amount of waste generated, the availability of recycling or reuse and proper disposal method for each waste type. To facilitate the data base information collection, all hazardous waste generation should be disclosed by small businesses upon business license application or renewal. An audit of various industrial groups can be conducted to ascertain the accuracy of reporting of hazardous waste types and quantities generated.

The City of Hercules will evaluate the need to develop a small quantity generator program with emphasis on a regional program with neighboring cities. This program might include distribution of educational materials, providing a SQG hotline and/or coordinating a SQG waste consolidation program. These three options are described briefly in the points below:

- o Educational Materials - Educational materials can be disseminated as part of a SQG inspection program. Educational materials should address recycling, re-use options, waste minimization and proper disposal methods.
- o SQG Information Hotline - The City of Hercules should evaluate the potential feasibility of establishing a SQG hotline service. This service would provide an information clearinghouse coordinating with Contra Costa County, and responsible State and Federal Agencies. The service would provide technical assistance, contacts within these agencies and respective telephone numbers.
- o Coordinate an SQG Waste Consolidation Program - The City could enhance proper hazardous waste disposal for SQG's by coordinating a frequent consolidated collection program. Currently SQG hazardous waste is managed by individual companies. Consolidated collection by a service contractor could reduce disposal cost to each generator and serve as a valuable asset for consolidated bulk handling of used oil, solvents and other frequently generated wastes.

The City or JPA could work with the local Chamber of Commerce or other business groups to coordinate such programs.

5.15 HOUSEHOLD HAZARDOUS WASTES

Household hazardous waste management is one of the most difficult issues to deal with due to the small volume of waste and large numbers of necessary participants. Household hazardous waste in Hercules and nearby cities is currently being addressed (along with related requirements of AB 939) by the West County Solid Waste JPA.

That JPA is currently evaluating the advisability of providing oversight capability for household hazardous waste requirements in its jurisdiction. The JPA is also participating in the development of the West County Resource Recovery Center which is expected to provide a transfer station, recycling center and household hazardous waste capability by 1991. The sections below outline current and potential household hazardous waste management methods.

5.15.1 Current Household Hazardous Waste Management

Currently, common household hazardous waste is disposed of by depositing the waste into a residential garbage container; dumping the waste into the City sewer system via a sink or storm drain; pouring the waste onto driveways, streets and land or extending the storage of the waste in old and obsolete containers. The City and County are currently undertaking joint efforts which included a recent collection day for household hazardous waste in June 1990.

Household hazardous waste which is disposed of in a residential garbage container places a potential risk on human and environmental health. Through this disposal method a potential human injury could result from chemical exposure with respect to the refuse collector, transfer station worker, or landfill operator.

Additionally, the surrounding environment is at risk of contamination from the hazardous waste during the transferring, compacting, or final disposal process. Recent data has indicated that household hazardous waste, which is deposited in municipal landfills, has the potential to contaminate groundwater. Contamination occurs through absorption of the chemical which does not degrade similar to the other constituents of the landfill site.

Household hazardous waste which is disposed into a homeowner's sink or drain will migrate along the sewer system and eventually enter into a wastewater treatment facility. Wastewater treatment facilities are not designed to treat, store or dispose of hazardous waste; therefore, the waste stream may disrupt the normal wastewater treatment process or pass through the system untreated. If wastewater effluent or residual solids are toxic, the wastewater treatment facility could be fined or have other regulatory action imposed.

Household hazardous wastes that are disposed via a septic system may disrupt the normal septic process and pass through the system untreated creating a potential groundwater contamination. Hazardous waste that is dumped into street gutters, catch basins and storm drains contaminate the creeks which discharge to the Bay/Delta estuary.

Household hazardous waste such as waste oil and auto-body shop products were previously deposited on land as a form of weed control. This practice actually destroyed plants and had the potential to harm animals and contaminate groundwater. Illegal land disposal still occurs - this disposal technique may also include burying the substance in the back yard or improperly disposing of the waste on other property.

Many homeowners are unaware of the proper disposal procedures for household hazardous wastes, therefore, in some instances, the waste is stored indefinitely. This practice can produce unstable and reactive chemicals which represent additional hazards. Mixing incompatible chemicals can create a harmful potential chemical reaction such as an explosion, fire, vapor generation, heat, etc.

5.15.2 Recommended Household Hazardous Waste Management

The City of Hercules and the West County Solid Waste JPA should continue to assist the community in the proper household hazardous waste management procedures. This effort should promote and incorporate household hazardous waste collection days, educational programs, publicity campaigns and the development and implementation of a household hazardous waste component at the Richmond Transfer Station (West County Resource Recovery Center).

Household hazardous waste collection, recycling and disposal days should continue to be held and should be scheduled on a regular basis and available to all residents within the City of Hercules. Regular household hazardous waste collection programs can greatly reduce the volume of hazardous waste in the solid waste stream and wastewater treatment process. Additionally, a convenient collection program will provide an avenue for homeowners to dispose of their hazardous waste in a responsible manner and will discourage illegal disposal practices.

Along with the aforementioned collection efforts, the City of Hercules should continue to focus attention on public educational programs. The educational element should concentrate on homeowners awareness, waste minimization, safe handling guidelines and proper disposal techniques. Educational programs can be promoted in public school, various organizations, private clubs and public outreach centers. Household hazardous waste promotion programs can be sponsored through the City of Hercules or in conjunction with another agency or association.

Publicity can be a useful tool in the effort to increase public awareness of household hazardous wastes and the proper management of these waste streams. Publicity information can be distributed by direct mailing, posters, flyers, newspaper advertisements and

public service announcements on the radio and television. Annually, the City of Hercules generally identifies the recycling locations, provides information regarding household hazardous waste and encourages recycling efforts to all residents within the City of Hercules via the city newspaper, "Herculean". The City newspaper is distributed on a quarterly basis to all the residents with a Hercules postal address and the Viewpoint development in Rodeo. Additionally, a household hazardous waste management video has been produced by the City and is periodically shown on TV and Cable TV.

6.0 CITY HAZARDOUS WASTE MANAGEMENT PLAN IMPLEMENTATION

Implementation of the Hazardous Waste Management Plan can only result from the establishment of long-term programs for effective hazardous waste management. The Plan also deals in part with the establishment of programs which will encourage safer handling of hazardous materials. This Chapter outlines major procedures and estimated timeframes for carrying out the implementation of this HWMP.

6.1 PUBLIC EDUCATION AND PARTICIPATION

Public education and participation regarding hazardous waste and hazardous materials is probably the most important element in developing an effective HWMP. Only the public can give the City of Hercules the broad support it needs to carry out hazardous waste programs at the small quantity generator and household level. This HWMP recommends that the following programs involving the public be carried out during the first two years following adoption of the plan:

- o Consider establishing a regional group to oversee plan implementation and develop further public programs as necessary. Such a group might be composed of staff from neighboring cities and Contra Costa County
- o Establish household hazardous waste collection days and collection programs (similar to that held in early summer 1990)
- o Develop public seminars, workshops and other means to educate the public regarding hazardous waste and hazardous materials

Establishment of these and other necessary programs will help bring pressure to bear on generators, transporters and others involved with hazardous waste to pursue all available hazardous waste reduction and on-site treatment options available to them.

6.2 ONGOING DATA COLLECTION AND ANALYSIS PROGRAM

The City of Hercules will enhance an existing program for establishing and maintaining a data base of hazardous waste generation, treatment, transportation and disposal within the City's Sphere of Influence. The program will be implemented by the City Planning Department for the City Manager and will derive updated data based on questionnaires associated with business license applications and renewals. For facilities within the City's sphere of influence, but outside city limits, the City will rely on Contra Costa County to supply needed information.

6.3 WASTE REDUCTION IMPLEMENTATION PROGRAM

Waste reduction is the primary and preferred tool for coping with the problems of hazardous waste management according to the California Department of Health Services (DHS 1987a). Waste reduction, and waste minimization can be effectively implemented by local governments or regional groups through:

- o Educational outreach programs
- o Technical assistance programs
- o Regulatory programs

Such programs have proven extremely effective at both the county and city level in areas where they have been effectively implemented. Case study examples cited by DHS include Ventura County, where off-site treatment volume was reduced by 70 percent in a three year period, as well as in Orange County, Los Angeles,

Santa Clara County and the City of Hayward. Effective program implementation usually involves coordination by several local government agencies as well as coordination with other jurisdictions (Local Government Commission 1988).

The City of Hercules will seek to establish aggressive and effective programs for controlling production of hazardous waste, and for reducing the total amount of waste produced within the city through the proposed Joint Powers Authority discussed above. This JPA will be charged with establishing waste minimization goals and implementing waste minimization programs which may include a requirement of hazardous waste generators to prepare formal Hazardous Waste Minimization Plans as one tool to pursue waste minimization. If a JPA is not formed, the City will consider alternative programs to promote hazardous waste minimization.

The Hercules Municipal Code will be revised to conform with waste minimization requirements. Businesses generating hazardous waste will be required to submit the following information to the City of Hercules Planning Department:

- o An estimate of the quantity of hazardous waste generated
- o A review of feasible source reduction approaches, including the potential for input changes, operational improvements, production process changes, in-process recycling, and product reformulations
- o An identification of the source reduction measures which will be implemented
- o An evaluation of the cross-media impacts of the chosen measures

- o An implementation timetable

These elements will form the Hazardous Waste Minimization Plan for each business affected.

6.4 SITING

The siting of Treatment, Storage and Disposal (TSD) Facilities within the city limits shall be governed by the criteria developed in Section 5.7.2 of this document. The criteria include standard State criteria developed by DHS, criteria in the Contra Costa County Hazardous Waste Management Plan (Contra Costa County 1988) and additional criteria specific to the City of Hercules.

6.5 TRANSPORTATION

The Circulation Element of the Hercules General Plan currently contains no explicit references to transport of hazardous waste or materials. The plan element does designate two roadways as scenic routes including State Highway 4 and San Pablo Avenue. These roadways, however, are not specifically restricted from hazardous waste transport. The downtown area of Hercules is generally considered by the city to be inappropriate for transport of hazardous waste, however, these areas are not specifically restricted in any way against transport of hazardous waste.

The City is currently in the process of amending the City General Plan through addition of this element (HWMP) to include restrictions on hazardous waste facilities, however, these restrictions will not affect transport of waste to and from these facilities. The City should update the Circulation Element of the General Plan to include both guidelines and restrictions for hazardous waste carriers from roads which are environmentally

sensitive, lie along high density residential or commercial areas, or pose undue risk of public health and safety.

Rail transport of hazardous materials occurs in Hercules on two rail lines, Southern Pacific and the Atcheson-Topeka and Santa Fe. The update of the Circulation Element should also address risks associated with these transport facilities.

6.6 STORAGE

In early 1984, the Environmental Health Division of the County Health Services Department (HSD) was granted the power to administer the underground tank program in the County. Currently, HSD administers the countywide program. The HSD has currently identified 1,100 tank owners in the County and notified them of newly promulgated state requirements. The City should evaluate generating a data base in coordination with Rodeo-Hercules Fire Protection District, for those underground storage tanks (UST) or aboveground tanks located in Hercules to identify and track the progress of known tank problems.

Hercules should also provide a review of currently promulgated storage requirements to businesses that obtain or renew business licenses. Additional data could also be collected from the industries on hazardous materials/wastes upon renewal of licenses. A city hazardous materials storage permit could be an additional item for future consideration to obtain certain basic information for later review and future data base development. Current storage requirements enforced by the County are now made readily available to businesses in conjunction with license renewal applications.

The City should also bring city facilities into compliance with hazardous waste and hazardous materials regulations. This could be accomplished through a self-audit of city facilities.

6.7 CONTAMINATED SITES

Cleanup (remediation) of contaminated sites is generally the responsibility of the State and Federal Government or private owners of the sites. To date, local government has not become heavily involved in such cleanups. The City can, however, through maintenance of a contaminated site list and periodic checking with the appropriate regulatory agencies, maintain pressure to have sites within the City's sphere of influence remediated as expeditiously and in the most environmentally sound manner as possible.

6.8 SMALL QUANTITY GENERATORS

Hazardous waste from SQG's is often disposed of through inappropriate means because the wastes are generated in amounts small enough that use of certified route haulers is not perceived to be economical or necessary by the generators. The generator may not be aware of hazardous waste management requirements and penalties. The generator may also be unaware of alternative technologies for waste management including source reduction, recycling, treatment and disposal. The SQG waste program can be successfully implemented by the City of Hercules through:

- o Educational Materials
- o SQG Information Hotline
- o SQG Waste Consolidation Program

The City of Hercules should evaluate the implementation of a SQG program on a regional west-county basis following the adoption of the Hazardous Waste Management Policies contained in this plan. The designated lead department shall organize and implement the SQG Program.

6.9 HOUSEHOLD WASTES

The City of Hercules has developed a JPA with neighboring cities to deal with solid waste issues and is developing required household hazardous waste programs as required by AB 939. The proper management of household hazardous waste in the City of Hercules can be achieved by: 1) utilizing collection days, 2) educational and publicity programs, and 3) developing and implementing a household hazardous waste component at the future Richmond Sanitary Transfer Station. The City members of the solid waste JPA should work with the county, state and federal government along with private sectors to ascertain proper household hazardous waste management. Proper household hazardous waste management will minimize the entry of this waste into the municipal solid waste stream, minimize the entry of this waste stream into the wastewater treatment facility, and potentially eliminate or reduce illegal waste disposal.

6.9.1 Collector Days

The City of Hercules and the solid waste JPA should further focus efforts around regular and frequent household hazardous waste collection, recycling and disposal days. To make the collection days successful, they should be on a regular basis, held in various locations throughout the city, convenient and homeowner friendly. The collection program enables household hazardous waste to be properly managed by:

- o Promoting household hazardous waste awareness
- o Promoting waste minimization and recycling
- o Disposing of the waste

An alternative approach to the collection program is a permanent collection point such as the Richmond Transfer Station or a

permitted hazardous waste management facility. Richmond Sanitary Service is evaluating a phased approach program to add a household hazardous waste component to the Richmond Transfer Station.

6.9.2 Education Programs

The household hazardous waste education program shall target:

- o Homeowner awareness of household waste
- o Alternatives to hazardous waste production
- o Safe handling practices of household waste and appropriate disposal

The program will improve public understanding both of the proper handling and disposal of household hazardous waste and of alternatives to household products which contain hazardous materials. This program will be implemented by the solid waste JPA of which Hercules is a member.

An educational outreach could be achieved by developing educational materials such as flyers, brochures, pamphlets, posters, videos, etc. The educational materials will encourage the public to reduce their purchase of products with hazardous ingredients, to completely utilize the product containing hazardous ingredients, to recycle as appropriate and finally to utilize proper disposal mechanisms. The educational information can be distributed by direct mailing (i.e., Herculean, garbage bill, etc.), posters and flyers, newspaper advertisements and public service announcements on the radio and television.

Publicity campaigns can be sponsored by the City in public schools and various organizations and affiliations to further educate the residents. The campaign can incorporate contests with regard to developing posters, flyers and brochures development, which

concentrate on alternatives to waste production and proper disposal.

6.9.3 Responsibility and Resources

The household hazardous waste program should be developed and implemented as part of the solid waste JPA. The funding of this program can be costly and should be supported by residents of the cities in the JPA. A commonly employed and effective means of resource support is the placement of a nominal surcharge on all household garbage bills. The surcharge is used to properly dispose of hazardous waste.

6.10 EMERGENCY RESPONSE

The City will continue to coordinate with Rodeo-Hercules Fire Protection District and to operate as part of the West County Emergency Services JPA. In addition, the City should evaluate the need to adopt new city guidelines that coordinate city emergency management resources with the County Hazardous Materials Area Plan. Specific items that could be identified for city planning purposes could focus on the potential scenarios present in Hercules from existing and future industries. City, county, state, federal and private industry resources should be identified and information on their availability and resources be made available to city management personnel. Elements of city planning may include:

- o Information gathering (data on likely and worst case hazardous waste spills or other HAZMAT incidents)
- o Identify local agencies and their roles in a chemical emergency response incident
- o Development of any applicable city ordinances

- o Communication of resources and emergency response information to industries in Hercules
- o Distribution of any restrictions and/or alternatives, if chosen, to the public
- o Provide additional training to city personnel responsible for implementing any changes

6.11 REGULATIONS, ENFORCEMENT AND SURVEILLANCE

The City of Hercules is currently revising and updating the City General Plan (this HWMP) to contain provisions appropriate to dealing with hazardous waste produced and hazardous materials handled within the city limits.

The City of Hercules should train its current building and public works inspectors to recognize problems associated with hazardous waste and hazardous materials and to coordinate with fire inspectors on selected inspections. City police, building inspectors and other code enforcement inspectors have been trained in the basic elements of proper hazardous waste and hazardous materials management and handling. Such training should be continued and increased as appropriate. The City officials will coordinate with appropriate county officials to enforce laws and regulations.

6.12 ORGANIZATION AND RESPONSIBILITY

The two key departments responsible for hazardous waste and hazardous materials monitoring and enforcement under the direction of the City Manager will be the City Planning Department (land use related issues) and the Department of Public Works (city facilities). In addition, the City Attorney, coordinating with the

Finance Director, has jurisdiction over obtaining recompense for the City following emergency response incidents which are caused by transport or improper handling of hazardous wastes or materials within the city limits.

The Hercules police force and Rodeo-Hercules Fire Protection District shall respond appropriately to hazardous waste or material spills or incidents at facilities which endanger public health or safety. The City police shall coordinate with the State Highway Patrol, the Rodeo-Hercules Fire Protection District and other agencies having authority over such incidents. Whichever entity is the first responder generally establishes incident control until relieved by the appropriate incident commander (dependent upon jurisdiction).

6.13 FUNDING

Funding sources will be required for compiling and maintaining the City's data base, for developing and maintaining regulatory programs and for monitoring and inspection programs. Funding for the data base and associated activities can probably best be accomplished through a hazardous waste fee collected in association with collection of the City business license tax since the data for the data base will be acquired through the business license process. Funding for regulatory programs and for monitoring and inspection programs could be developed through a specific charge levied on hazardous waste producers or hazardous materials handlers. The Planning Department will work with the Finance Department to establish fees for such programs.

6.14 MONITORING AND EVALUATION

A critical component of the success of the City of Hercules for managing hazardous waste and hazardous materials within its

boundaries will be properly coordinated and implemented monitoring and evaluation programs. These are recommended to include:

- o monitoring of generators of hazardous waste and hazardous materials to ensure compliance with the terms of this Hazardous Waste Management Plan, with the City Municipal Code and the City General Plan
- o Development of a procedure for evaluating compliance programs for hazardous waste generators and hazardous materials handlers including waste minimization requirements
- o Development of a procedure for tracking the progress of responsible agencies in cleaning up hazardous sites within the City's sphere of influence and for identifying responsible parties for sites not under active cleanup by agencies
- o General monitoring of hazardous indicator parameters (such as toxic air contaminate) in the City's air, water and soil as necessary to protect human health and safety and the environment
- o Designation of a person or task force to work with neighboring jurisdictions on a broad spectrum of hazardous waste issues.

Utilization of these monitoring and evaluation programs will accomplish the City's goal to carefully monitor hazardous waste and to coordinate the various City programs.

7.0 REFERENCES

- Association of Bay Area Government. 1985. The Disposal of Hazardous Waste by Small Quantity Generators. Oakland, California.
- California Department of Health Services. 1987a. Guidelines for the Preparation of Hazardous Waste Management Plans. Toxic Substances Control Division. Sacramento, California.
- California Department of Health Services. 1987b. Technical Reference Manual of the Guidelines for the Preparation of Hazardous Waste Management Plans. Toxic Substances Control Division. Sacramento, California.
- California Office of Planning and Research. 1988. Hazardous Waste and Substances Sites List. Office of Permit Assistance. Sacramento, California.
- City of Hercules. 1990a. Hercules General Plan. Planning Department. Hercules, California.
- City of Hercules. 1990b. Economic Development Strategy Plan. Economic Development Strategy Planning Task Force. Hercules, California.
- City of Hercules. 1987. Municipal Code of the City of Hercules. Hercules Municipal Code. Title 10, land use. Hercules, California.
- Contra Costa County. 1989a. Final County Hazardous Waste Management Plan. Community Development Department. Martinez, California.
- Contra Costa County. 1989b. Draft Subsequent Environmental Impact Report on the Contra Costa County Final Hazardous Waste Management Plan. Community Development Department. Martinez, California.
- Contra Costa County. 1989c. Unpublished records of hazardous waste and substances sites in Contra Costa County. County Planning Department. Martinez, California.
- Garrett, K. 1990. Personal communication with Dr. G.B. Shea, W.E.S. Technology Corporation from Mr. Kevin Garrett, Planning Director, City of Hercules. Hercules, California.
- IT Corporation. 1989a. Facility Hazardous Waste Report for 1988, Vine Hill Facility. Department of Health Services. Sacramento, California.

- IT Corporation. 1989b. Facility Hazardous Waste Report for 1988, Baker Facility. Department of Health Services. Sacramento, California.
- IT Transportation Corporation. 1989. Facility Hazardous Waste Report for 1988. Department of Health Services. Sacramento, California.
- Sedway and Associates. 1990. Hercules Housing Element, Hercules General Plan. City of Hercules. Hercules, California.
- Solano County Department of Environmental Management. 1989. Solano County Hazardous Waste Management Plan. Brown, Vence and Associates. San Francisco, California.
- U.S. Environmental Protection Agency. 1989. CERCLIS Data Base Site List. Unpublished Data. Region IX. San Francisco, California.

8.0 PROJECT STAFF

Network Environmental Systems Staff who participated in this project include:

- o Dr. G. Bradford Shea, Project Manager
- o Mr. Jerry Bucklin, Contract Administrator and Policy Analyst
- o Ms. Geri Silva, Hazardous Materials Analyst
- o Mr. Robert M. Boggs, Chemical Engineer
- o Mr. Joseph Wasilewski, Environmental Engineer
- o Mr. Bruce Lazarus, Health and Safety Expert
- o Ms. Mary Shea, Word Processor

Network Environmental Systems, Inc. also wishes to thank City Staff who participated in and helped provide information for this project. These include:

- o Ms. Marilyn Leuck, City Manager
- o Mr. Kevin Garrett, Planning Director
- o Mr. William Bullard, City Attorney
- o Mr. Ron Richardson, Public Works Director

In addition, many people from various industries and government agencies provided data and information without which this Plan would not have been completed. These include:

- o Mr. Dennis Salmi, Rodeo-Hercules Fire Protection District
- o Mr. John Knight, Pacific Refining Company
- o Mr. David McAll, Mr. Bill Young, Bio-Rad Laboratories

In addition to these major contributors, others too numerous to mention assisted the effort by supplying data and information on specific facilities.

9.0 FIGURES



Figure 1
AREA MAP

FIGURE 2.
HERCULES VICINITY MAP



FIGURE 3.
HERCULES BOUNDARY MAP





FIGURE 4. MAJOR EXISTING GENERATORS



CIRCULATION PLAN

LEGEND

-  FREEWAYS
-  ARTERIALS
-  LOCAL COLLECTOR
-  FREEWAY INTERCHANGE
-  RAILROADS
-  SCENIC ROUTES
-  FUTURE HIGHWAYS
-  GRADE SEPERATION

FIGURE 5.
MAJOR EXISTING TRANSPORTATION CORRIDORS



LAND USES

LEGEND

RESIDENTIAL

- [L] LOW DENSITY
- [ML] MED LOW DENSITY
- [M] MEDIUM DENSITY
- [MH] MEDIUM HIGH DENSITY
- [H] HIGH DENSITY

PUBLIC

- [CC] CIVIC CENTER
- [HS] HIGH SCHOOL
- [JHS] JUNIOR HIGH
- [E] ELEMENTARY
- [MP] MULTI-PURPOSE

CIRCULATION

- [FW] FREEWAYS
- [ST] STREETS
- [RR] RAILROADS

PARKS-OPEN SPACE

- [A] COMMUNITY PARK
- [NP] NEIGHBORHOOD PARK
- [WP] WATERFRONT PARK
- [OS] OPEN SPACE

COMMERCIAL

- [TC] TOWN CENTER
- [BC] BUSINESS
- [HC] HIGHWAY
- [IC] INDUSTRIAL
- [NC] NEIGHBORHOOD

INDUSTRIAL

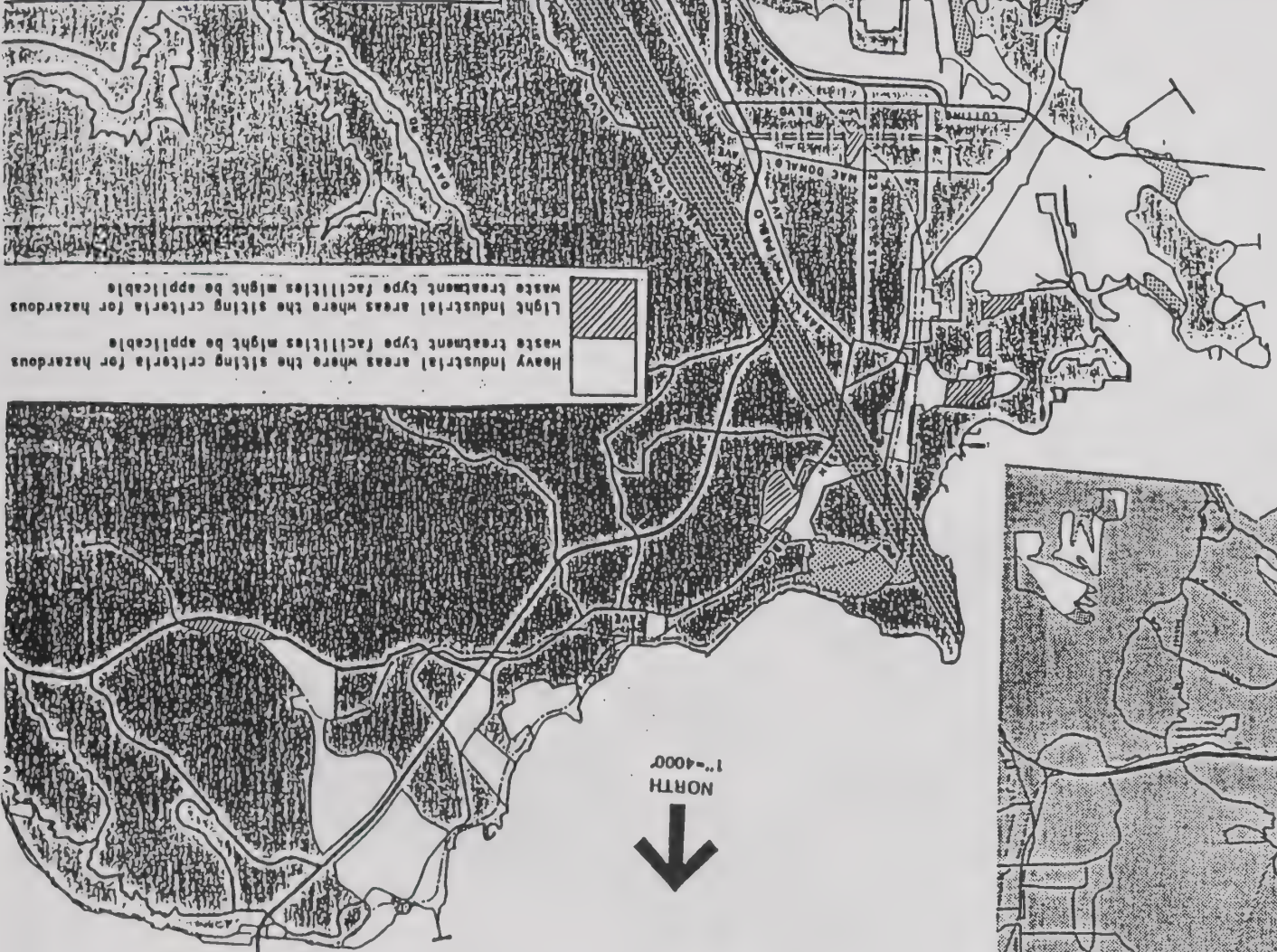
- [I] INDUSTRIAL
- [HD] HISTORIC DISTRICT

FIGURE 6.

FIGURE 7.
PROJECTED COUNTYWIDE WASTE
GENERATION AND TSD FACILITIES

Areas eliminated from consideration due to having one or more of the following characteristics:
 faults, flood plains, wetlands, military lands, airports
 prime agricultural lands, recreational/cultural/aesthetic
 areas, mineral resources, reservoir watersheds
 and residential use.

General areas where the siting criteria for Residual
 Repositories might be applicable







Industrial areas excluded from hazardous waste treatment type
 facility siting by the following criteria:
 Wetlands
 Prime farmlands
 Areas of high archeological sensitivity and known sites
 Non-industrial designated lands
 Alquist - Priolo Special Studies Zone: an active fault
 (if within 200' of the proposed facility) would preclude
 the siting.

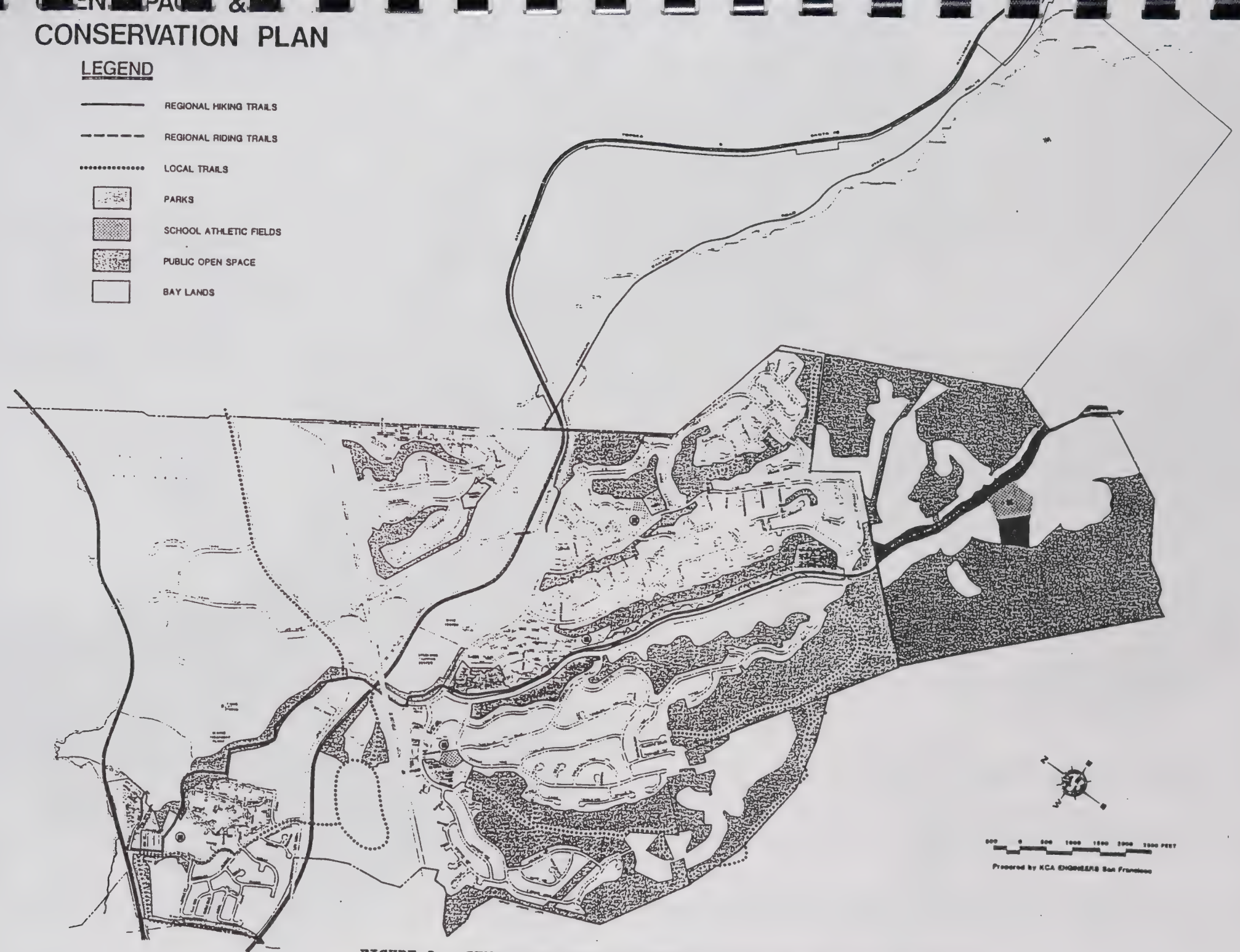
Heavy industrial areas where the siting criteria for hazardous
 waste treatment type facilities might be applicable
 Light industrial areas where the siting criteria for hazardous
 waste treatment type facilities might be applicable

These criteria only plotted for industrial areas

CONSERVATION PLAN

LEGEND

- REGIONAL HIKING TRAILS
- - - REGIONAL RIDING TRAILS
- LOCAL TRAILS
-  PARKS
-  SCHOOL ATHLETIC FIELDS
-  PUBLIC OPEN SPACE
-  BAY LANDS



0 500 1000 1500 2000 FEET

Prepared by KCA ENGINEERS San Francisco

FIGURE 8. SENSITIVE AREAS INAPPROPRIATE FOR TSD FACILITY SITING

FIGURE 9.
MAJOR KNOWN CONTAMINATED SITES



10.0 TABLES

TABLE 1. QUANTITIES OF MANIFESTED WASTE GENERATED
IN HERCULES AND SHIPPED OFF-SITE

<u>Facility Name</u>	<u>Waste Generation (Tons)*</u>	
	<u>1986</u>	<u>1988</u>
King Oil Company	1,646.43	ND
Hercules Little League Field	1,603.08	ND
Pacific Refining Company	497.49	423.83
Hercules Properties Ltd	ND	53.92
Mechanics Bank of Richmond-Trustee	ND	0.08**
Caltrans District 4	ND	0.88***
Bio-Rad Laboratories	ND	1.12
TOTAL	3,747.00	478.83

* Note: These figures from DHS Manifest summary data often disagree with Annual Reports submitted to DHS by industries by up to 20%.

**Best estimate from available data.

***These wastes were not shipped off-site but were contained in wastewater discharged to storm drain.

TABLE 2. CURRENT MANIFESTED HAZARDOUS WASTE IMPORTED
AND EXPORTED FROM HERCULES (1988, 1989)

<u>Generator</u>	<u>Waste Stream</u>	<u>Manifested Waste (tons)</u>	<u>Imp/Exp</u>
Pacific Refining Company (1989)	K-Waste	155.0	E
	Bio-Sludge	141.0	E
	Spent Catalyst	15.0	E
	Asbestos Waste	27.0	E
Bio-Rad Laboratories (1988)	Halogenated Solvents	0.22	E
	Unspecified Solvent		
	Mixture	0.90	E

TABLE 3. CURRENT WASTE PRODUCTION FROM SMALL QUANTITY GENERATORS BY WASTE TYPE (1988 Estimated)

<u>Waste Type</u>	<u>Waste Group</u>	<u>Waste Production (Tons/yr)</u>
Arsenic Wastes	Metal Containing Liquids	0.00
Cyanide Wastes	Cyanide & Metal-Containing Liquid	0.32
Dry Cleaning (Filtration Residue)	Non-Halogenated Organic Sludges & Solids	17.79
Empty Pesticide Containers	Miscellaneous Wastes	0.68
Heavy Metal Dust	Miscellaneous Wastes	0.29
Heavy Metal Solutions	Metal-Containing Liquids	0.00
Heavy Metal Waste Material	Metal-Containing Liquids	0.54
Ignitable Paint Wastes	Dyes, Paint Sludges & Resin Wastes	10.03
Ignitable Wastes	Non-Halogenated Solvents	14.66
Ink Sludges Containing Chromium or Lead	Metal-Containing Sludges	0.04
Mercury Wastes	Metal-Containing Liquids	0.14
Other Reactive Wastes	Non-Metallic Inorganic Liquids	1.90
Paint Waste Containing Heavy Metals	Metal-Containing Sludges	0.21
Pesticide Solutions	Pesticides	1.09
Photographic Wastes	Miscellaneous Wastes	2.40
Solvent Still Bottoms	Halogenated or Non-Halogenated Sludges & Solids	0.24
Spent Plating Wastes	Metal Containing Liquids	0.30
Spent Solvents	Halogenated or Non-Halogenated Solvents	30.64
Solutions or Sludges Containing Silver	Metal-Containing Liquids & Sludges	0.00
Strong Acids or Alkalies	Non-Metallic Inorganics Liquids	11.46
Used Lead-Acid Batteries	Miscellaneous Wastes	16.95
Waste Formaldehyde	Organic Liquids	33.23
Waste Inks Containing Flammable Solvents or Heavy Metals	Metal Containing Liquids	0.38
Waste Pesticides	Pesticides	3.15
Wastewater Containing Heavy Metal Sludges	Metal Containing Sludges	0.08
Wastewater Containing Wood Preservatives	PCBs and Dioxins	0.00
Wastes Containing Ammonia	Non-Metallic Inorganic Wastes	1.35
Other	Miscellaneous Wastes	44.88
TOTAL		192.75

**TABLE 4. WASTE OIL GENERATION BY SMALL QUANTITY GENERATORS
IN THE CITY OF HERCULES FOR 1990**

Business Sector	Specific Business Type	1990 No. of Firms	Waste Oil Generation Factor		Generated (tons)
			DHS (gal/yr)	Total Amount (tons/yr)	
Vehicle Maintenance (Automotive Related)	Recycling Centers		3,222	12.10	
	Service Stations		2,998	11.26	
	Repair Shops		3,032	11.39	
	Auto Dealers		2,962	11.12	
	Auto Centers	1	3,010	11.30	11.30
	Fleet Shops		3,160	11.30	
	Airports		2,800	10.51	
				Subtotal	11.30
Industry Related (Manufacturing)	Wood Products		2,676	10.05	
	Furniture & Fixtures		2,365	8.88	
	Pulp/Paper		*	*	
	Newspapers		2,779	10.44	
	Chemicals		2,799	10.51	
	Rubber/Plastic	1	2,407	9.04	9.04
	Leather		*	*	
	Glass		*	*	
	Primary Metals		2,969	11.15	
	Fabricated Metals		2,691	10.10	
	Machinery		2,592	9.73	
	Electronics	1	2,655	9.97	9.97
	Motor Vehicles	1	2,501	9.39	9.39
	Instruments	1	2,389	8.97	8.97
	Miscellaneous Manufacturing		2,522	9.47	
	Electrical Utilities		5,319		
	Commercial Marine Terminals		*		
	Railroad Yards		*		
				Subtotal	37.37
				Estimated Total	48.67

Number of businesses based on Small Business List.

Source: "Determining Used Oil Volumes Generated by Selected Small Quantity Generators", DHS 1987

* DHS did not supply a waste oil generation factor for this industry, and, thus, a quantity cannot be calculated.

TABLE 5. HOUSEHOLD HAZARDOUS WASTE GENERATED IN 1989

<u>Waste Group</u>	<u>Ton/year</u>	<u>Quantity Percent</u>
Oil and Similar Lubricant Products	9.2	46%
Paint and Building	5.8	29%
Gasoline and Solvents	4.0	20%
Other Wastes	<u>1.0</u>	<u>5%</u>
Total Household Hazardous Wastes	20.0	100%

TABLE 6. KNOWN CONTAMINATED SITES WITHIN AND NEAR THE CITY OF HERCULES
DESIGNATED BY THE STATE BOND EXPENDITURE PLAN

<u>Site Name</u>	<u>Type of Contamination</u>	<u>Cleanup Status*</u>
Hercules Properties Ltd.	Acids, Caustics, Heavy Metals, Asbestos (soil)	Ongoing (Additional Investigations)
Hercules, Inc.	Munitions and Explosives (soil) (trinitrotoluene, dinitrotoluene, dinitrobenzene, lead)	Ongoing (Pilot Test in Progress)
ASARCO*	Arsenic, Lead, and other Heavy Metals (soil)	Ongoing
American Standard Products*	Lead (soil)	Remediation to begin 1990
Cooper Chemical*	Lead, Zinc, Copper (soil)	Ongoing
FMC Corporation*	Heavy Metals in Soil; Solvents Organochlorine and organophosphorus Pesticides in Soil & Groundwater	Ongoing
Drew Sales*	Copper, Nickel, Lead and Zinc (soil)	Ongoing

*These sites are not located within the Hercules City Limit, but are within approximately 10 miles of the City.

TABLE 7. PROJECTED QUANTITIES OF HAZARDOUS WASTE GENERATION
IN HERCULES (Year 2000)

<u>Facility Name</u>	<u>Waste Generation (Tons)*</u>	
	<u>1988</u>	<u>2000</u>
Pacific Refining Company	423.8	423.8-847.6
Mechanics Bank of Richmond - Trustee	0.08	0.08-0.16
Caltrans District 4	0.88	0.88-1.76
Contaminated oil from existing sites	53.9	0.0
Bio-Rad Laboratories	1.12	1.12-2.3*
Small Quantity Generators	192.8	150.9-218.4
Waste oil	48.7	55.5
Household Waste	<u>20.0</u>	<u>18.7- 22.6</u>
Total	741.28	650.98-1,148.32

*This number could be considerably higher if the company's chemical division locates in Hercules.

TABLE 8. ESTIMATE OF HOUSEHOLD AND SQG HAZARDOUS WASTE
IN THE YEAR 2000 (Tons/Year)

<u>Waste Group</u>	<u>Without Waste Min.</u>	<u>With Waste Min.</u>
HOUSEHOLD HAZARDOUS WASTE		
Oil and Similar Lubricant Products	10.5	9.6
Paint and Building	6.6	6.2
Gasoline and Solvents	4.5	2.3
Other Wastes	<u>1.1</u>	<u>0.6</u>
Total Household Hazardous Waste	22.7	18.7
SMALL QUANTITY GENERATOR HAZARDOUS WASTE		
Arsenic Wastes	0.00	0.00
Cyanide Wastes	0.36	0.03
Dry Cleaning Filtration Residues	20.28	20.08
Empty Pesticide Containers	0.77	0.75
Heavy Metal Dust	0.33	0.25
Heavy Metal Solutions	0.00	0.00
Heavy Metal Waste Materials	0.62	0.46
Ignitable Paint Wastes	11.43	10.86
Ignitable Wastes	16.71	15.21
Ink Sludges Containing Chromium or Lead	0.05	0.04
Mercury Waste	0.16	0.12
Other Reactive Wastes	2.17	2.13
Paint Wastes Containing Heavy Metals	0.24	0.18
Pesticide Solutions	1.24	1.22
Photographic Wastes	2.74	2.07
Solvent Still Bottoms	0.27	0.25
Spent Plating Wastes	0.34	0.25
Spent Solvents	33.65	30.62
Solutions or Sludges Containing Silver	0.00	0.00
Strong Acids or Alkalies	13.06	9.79
Used Lead-Acid Batteries	19.32	14.49
Waste Formaldehyde	37.88	36.36
Waste Inks Containing Flammable Solvents or Heavy Metals	0.43	0.32
Waste Pesticides	3.59	3.52
Wastewater Containing Heavy Metals	0.09	0.07
Wastewater Containing Wood Preservatives	0.00	0.00
Waste Containing Ammonia	1.54	1.51
Other	<u>51.16</u>	<u>50.14</u>
Total SQG Hazardous Waste	218.43	200.72

The year 2000 Household Hazardous Waste Projection was based on information obtained from the State DOHS; and the ABAG projection (1987).

TABLE 9. PROJECTED QUANTITIES OF CLEANUP WASTES AND NEW
WASTE STREAMS

<u>Facility Name</u>		<u>Waste Generation (Tons)</u>	
		<u>1988</u>	<u>2000</u>
Pacific Refining Company	K-Waste	155.0	155.0-310.0
	Bio-Sludge	141.0	141.0-282.0
	Spent Catalyst	15.0	15.0- 30.0
	Asbestos Waste	27.0	< 1.0
	Other Waste	85.8	85.8-171.6
Bio-Rad Laboratories	Solvents	1.12	1.12-2.3
	Other Waste	0.2	0.2-0.4
Contaminated Sites	Contaminated Soil	53.9	0

TABLE 10. PROJECTED CITY OF HERCULES NEEDS ASSESSMENT
YEAR 2000 (TONS/YEAR) *

<u>Waste Type</u>	<u>Projection</u>	<u>Current Capacity</u>
Waste Oil	58.3	0.0
Halogenated Solvents & Non-Halogenated Solvents	33.5	0.0
Organic Liquids	37.5	0.0
Pesticides	4.8	0.0
PCB's & Dioxins	0.0	0.0
Oily Sludges & Halogenated Organic Sludges & Solids	0.3	0.0
Dye & Paint Sludges & Resins	11.3	0.0
Metal Containing Liquids	1.6	0.0
Cyanide & Metal Liquids	0.0	0.0
Non-Metallic Inorganic Liquids	2.1	0.0
Metal Containing Sludges	0.4	0.0
Non-Metallic Inorganic Sludges	444.0	0.0
Contaminated Soil	0.0	0.0
Miscellaneous Wastes	<u>74.7</u>	<u>0.0</u>
TOTAL	668.5	0.0

TABLE 11. METHODS FOR REDUCING EXPOSURE TO HOUSEHOLD TOXICS
(Source: Golden Empire Health Planning Center)

- o Purchase less toxic or non-toxic items whenever possible.
- o Buy only the amount needed to do the job.
- o Give leftover paint (not lead-based) to a neighbor to use.
- o Avoid use of aerosols. They are a high source of indoor air pollution.
- o Recycle motor oil at a participating service station. Call the California Waste Management Board at (800) 925-5545 for locations.
- o Keep products in their original containers.
- o Use products in well-ventilated areas. An open door or window may not be enough.
- o Wear protective clothing.
- o Never mix products unless instructions call for it. Adverse chemical reactions can occur.
- o Use only the recommended amount. "More" is not better.
- o Consider whether the product can be used less frequently.
- o Keep products out of reach of children and pets.
- o Use the free collection program to rid your home of old and unwanted products containing toxic chemicals.

11.0 TECHNICAL APPENDICES

APPENDIX A – SMALL QUANTITY GENERATOR CALCULATION TABLES

ASSIGNED INDUSTRIAL GROUPS POTENTIALLY CONTAINING SMALL QUANTITY GENERATORS

Group No.	Industrial Group	Assigned SIC's
1	Agriculture	100
2	Building & Construction Firms	1500, 1700
3	Vehicle Maintenance Shops	1600
4	Lumber & Wood Products	2400
5	Printers (typesetting)	2600, 2700
6	Chemical Products	2800
7	Petroleum Products	2900
8	Metal Manufacturers	3300, 3400, 3500, 3600, 3800
9	Transportation Equipment	3700, 4200, 4700
10	Utility Companies	4900
11	Railroad Facilities	4000
12	Gasoline Service Stations	5100, 5500
13	Personal Businesses (laundromats)	7200
14	Wholesale & Retail Sales	5000, 5200
15	Analytical & Clinical Labs	8200
16	Health Services	8000
17	Businesses (General office/consult.)	7300
18	Automotive Repair Services & Garages	7500
19	Miscellaneous Repair Services	4600, 4800, 7600
20	Other Businesses	Miscellaneous
21	Graphics, Sign Co.s, Graphic Designs	
22	Equipment Rental	

Source: National Small Quantity Hazardous Waste Survey, U.S. EPA, February 1985.
 Contra Costa County Hazardous Waste Management Plan, June 1989.
 Solano County Hazardous Waste Management Plan, August 1989.
 City of Martinez Draft Hazardous Waste Management Plan, March 1990.

TABLE A-1

INDUSTRIAL GROUPS POTENTIALLY CONTAINING
SMALL QUANTITY GENERATORS

Group No.	Industrial Group			
1	Pesticide End Users			
2	Pesticide Application Services			
	COMMUNITY PROJECTS	P.O. BOX 5701	HERCULES	100
	PRO MED, INC.	15 MOONSTONE COURT	HERCULES	100
3	Chemical Manufacturing			
	BIO-RAD LABORATORIES, INC.	1000 ALFRED NOBEL DRIVE	HERCULES	2800,8200
	BIOVATION INC.	875 ALFRED NOBEL DRIVE	HERCULES	2800,8200
	IMMAGEWORKS	1611-F SYCAMORE	HERCULES	2800
4	Wood Processing			
5	Formulators			
6	Laundries			
	A & A 24 HR. JANITORIAL SERVICE	244 STARLING WAY	HERCULES	7200
	ARTISTRY IN CAKES AND FLOWERS	220 O'NEIL CIRCLE	HERCULES	7200
	CREEKSIDE DRYCLEANERS	1511 SYCAMORE AVE. #g	HERCULES	7200
	ECON JANITORIAL SERVICES	139 CINNABAR WAY	HERCULES	7200
	GEORGIO'S CUSTOM DRAPERY SERVICE	157 OXFORD STREET	HERCULES	7200
	GOTCHA COVERED WINDOW FASHIONS	112 IRIS CT.	HERCULES	7200
	HERCULES BUILDING MAINT JANIT. SRV.	38 CRYSTAL CIRCLE	HERCULES	7200
	HERCULES JANITORIAL SERVICES	1640 PARTRIDGE DRIVE	HERCULES	7200
	IDA F LIPSCOMB	1011 CHELSEA	HERCULES	7200
	IMRIE INVESTIGATIONS	P.O. BOX 5394	HERCULES	7200
	INTERIOR ACCENTS UNLIMITED	106 BOBOLINK WAY	HERCULES	7200
	INTERIOR DECORATOR L. VANNIEUWBURG	910 DOVER	HERCULES	7200
	LAD TRANSCRIPTION SERVICE	529 VALLEY RUN	HERCULES	7200
	LADAN MAJABI HARAZ CHILD CARE	106 STARLING	HERCULES	7200
	LITTLE CHIPS DAY CARE	331 NEWBURY	HERCULES	7200
	LITTLE TIKI STATION	2165 LUPINE	HERCULES	7200
	LOOK CARPET CLEANERS	1575 SWALLOW WAY	HERCULES	7200
	LOU'S SHINE-A-BLIND	P.O. BOX 5088	HERCULES	7200
	LYN'S CARPET CLEANING	121 CARDINAL WAY	HERCULES	7200
	MR. NEIGHBOR'S HOME & PET SITTERS	1263 CANTERBURY	HERCULES	7200
	PAC DATA TEMPORARY SERVICES	1133 WILLIAMS	HERCULES	7200
	PENNY RAMMER, INTERIOR DESIGN CONSU	118 AMETHYST COURT	HERCULES	7200
	PILLOW PRE-SCHOOL	1702 PHEASANT DRIVE	HERCULES	7200
	PROF. TRANSCRIPTION ASSOC.	P.O. BOX 5335	HERCULES	7200

ROY'S WINDOW CLEANING	145 DUNHAM	HERCULES	7200
SEW PERSONALIZED	142 LAPIS	HERCULES	7200
SIGNE-PSYCHIC PALM READER	184 NEWBURY	HERCULES	7200
SPECIAL OCCASIONS SERVICES	445 SPARROW DRIVE	HERCULES	7200
ST. DYMPHNA REST HOME	1640 PARTRIDGE DRIVE	HERCULES	7200
TANNING ATTRACTION	1581 SYCAMORE SUTTE 9	HERCULES	7200
UNIVERSAL PAINTING & DECORATING	1783 PHEASANT DRIVE	HERCULES	7200
WILLOW CLEANERS	844 WILLOW AVENUE AS	HERCULES	7200
WITH YOU IN MIND	#19 SAPPHIRE COURT	HERCULES	7200

7 Other Personal and Business Services

A & M PROPERTY MANAGEMENT	P.O. BOX 5207	HERCULES	7300
A CONSUMING PASSION	127 BAY ST.	HERCULES	7300
ACCOUNTANT ON WHEELS	310 FALCON WAY	HERCULES	7300
ADVANCED BUSINESS SERVICES	2250 REDWOOD ROAD	HERCULES	7300
ALBEDA MARKETING	211 MEADOWLARK WAY	HERCULES	7300
ALCIBIADES R. ABAD C.P.A.	1500 SYCAMORE AVE STE B10	HERCULES	7300
ALLWASTE SERVICES OF S.F. INC.	560 RAILROAD AVENUE	HERCULES	7300
AQUILA TRAVEL SVC. INC.	1511 SYCAMORE AVE. STE E	HERCULES	7300
ASSO/COMMUNITY CHANGE & DEVELOPMENT	178 BOBOLINK WAY	HERCULES	7300
B & J TECHNICAL CONSULTING	109 COLUMBINE	HERCULES	7300
BENSAN'S INSURANCE SERVICES	1500 SYCAMORE AVE STE B-8	HERCULES	7300
BETTER HOMES REALTY	1511 SYCAMORE #C	HERCULES	7300
BISHOP ROSE COMPANY	66 GLENWOOD	HERCULES	7300
BOOKKEEPING WORKS	509 TURQUOISE DRIVE	HERCULES	7300
BROWNLOW & BROWNLOW MANAGEMENT SERV.	100 SPARROW DRIVE	HERCULES	7300
CANCO TELECOMMUNICATION SERVICES	358 NEWBURY STREET	HERCULES	7300
CANDICE J. SALAZAR C.P.A.	142 BERYL COURT	HERCULES	7300
CENTURY 21 GREENHILLS REALTY	1500 SYCAMORE AVE STE B10	HERCULES	7300
CINDY'S INTERNATIONAL TRADERS	1500 SYCAMORE PLACE B-9	HERCULES	7300
CRISANTO G. ANTONIO	P.O. BOX 5662	HERCULES	7300
CUSTOM SIGN COMPANY	361 LILAC CIRCLE	HERCULES	7300
DE GRACIA REALTY	100 FINCH COURT	HERCULES	7300
EQUITY ASSOCIATES	169 OXFORD STREET	HERCULES	7300
FIRMAC INC.	1500 SYCAMORE PLACE B-8	HERCULES	7300
GAFNER & ASSOCIATES	130 MANZANITA PLACE	HERCULES	7300
GUERRERO INSURANCE AGENCY	844 WILLOW AVENUE A-9	HERCULES	7300
HERCULES PROPERTIES INC.	560 RAILROAD AVENUE	HERCULES	7300
HERITAGE FINANCIAL MANAGEMENT	118 AMETHYST COURT	HERCULES	7300
HIBERNIA INSURANCE SERVICES, INC.	825 ALFRED NOBEL DR STE 0	HERCULES	7300
HIGHLAND TRADING COMPANY	118 DOGWOOD COURT	HERCULES	7300
INFORM PUBLIC RELATIONS	560 RAILROAD AVE STE 204	HERCULES	7300
JOHN & JANIS PROPERTY MANAGEMENT	256 SPARROW DRIVE	HERCULES	7300
JON LEE BERG CO.	508 FALCON WAY	HERCULES	7300
KENNETH C. HILL ASSOCIATES	1687 PHEASANT DRIVE	HERCULES	7300
MARTECH INTERNATIONAL INC.	725-B ALFRED NOBEL DRIVE	HERCULES	7300
MICROPLUS DATA SYSTEMS	106 JARVIS LANE	HERCULES	7300
MIKE MOJABI, ACCOUNTANT	P.O. BOX 5141	HERCULES	7300
NUTRI SYSTEM	1611-G SYCAMORE AVENUE	HERCULES	7300
PATTY MURPHY BOOKKEEPING & TAX	2310 REDWOOD ROAD	HERCULES	7300
PRIOLEAU DISTRIBUTORS	130 COVENTRY	HERCULES	7300
PTI COMPUTER CONSULTING	599 TURQUOISE DRIVE	HERCULES	7300
R M T MARKETING GROUP	200 ORIOLE COURT	HERCULES	7300
RALEY'S TRAVEL CENTER	1592 SYCAMORE AVENUE	HERCULES	7300

RED CARPET ELITE REALTY	1521 SYCAMORE AVE. STE 5	HERCULES	7300
S & D CONSULTING	349 NEWBURY	HERCULES	7300
S & K ASSOCIATES	560 RAILROAD AVENUE	HERCULES	7300
SWANHILL PROPERTIES	825 ALFRED NOBEL DR STE B	HERCULES	73
SYNERGISTIC CONSULTING	560 RAILROAD AVE. #7	HERCULES	7300
THE COMPLETE SOLUTION	175 OXFORD	HERCULES	7300
TRUC M. MGUIEN DAND, ARCHITECT	133 LOCUST COURT	HERCULES	7300
UNITED CONSULTANT	P.O. BOX 5562	HERCULES	7300
VISUAL OPTIONS	112 THISTLE COURT	HERCULES	7300

8 Photography

9 Textile Manufacturing

10 Vehicle Maintenance

11 Equipment Repair

ALFRED CONHAGEN INC. OF CA	444 RAILROAD AVENUE	HERCULES	4600,4800,7600
B V I	241 IRIS ROAD	HERCULES	4600,4800,7600
CONTAINER LAND	521 TURQUOISE DRIVE	HERCULES	4600,4800,7600
LEE ELECTRONICS	112 MAPLE COURT	HERCULES	4600,4800,7600
NOVA COMMUNICATIONS	130 CARDINAL STREET	HERCULES	4600,4800,7600
ARMADILLO ENTERPRISES	777 RAILROAD AVE.	HERCULES	7500
PRIORITY TIRES INC.	P.O. BOX 5321	HERCULES	7500
PROFESSIONAL LIFTRUCK SERVICES	112 MESQUITE COURT	HERCULES	7500

12 Metal Manufacturing

PRECISION PRODUCTS	666 RAILROAD AVE.	HERCULES	3300,3400
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13 Construction

ALMOST AMISH	157 EAGLE COURT	HERCULES	1500,1700
AR LAND MAINTENANCE	523 VALLEY RUN	HERCULES	1500,1700
B F MAINTENANCE & GENERAL SERVICES	P.O. BOX 5032	HERCULES	1500,1700
BLAIR & SONS	P.O. BOX 5579	HERCULES	1500/1700
BRIGGS & BRIGGS CONSTRUCTION	100 ROSTI COURT	HERCULES	1500,1700
CARPETS CARPETS CARPETS	1681 PARTRIDGE	HERCULES	1500,1700
DAVES ELECTRIC CONSTRUCTION	P.O. BOX 5604	HERCULES	1500,1700
EAGLE HOME MAINTENANCE SERVICE	1693 PARTRIDGE DRIVE	HERCULES	1500,1700
EMERALD LANDSCAPE AND IRRIGATION	382 NO. WILDWOOD	HERCULES	1500,1700
EZ HOME COMMERCIAL REPAIR & MAINTEN	130 ASH COURT	HERCULES	1500,1700
HOME IMPROVEMENT SERVICES	212 SUNFLOWER COURT	HERCULES	1500,1700
J. F. DAYCO INTERNATIONAL INC.	109 ZIRCON COURT	HERCULES	1500,1700
JENSEN PAINTING	826 VALLEY RUN	HERCULES	1500,1700
JOHN DE CACCIA-CONCRETE CONTRACTOR	106 BELLFLOWER COURT	HERCULES	1500,1700
LIL'BUDS PLUMBING	160 VIOLET ROAD	HERCULES	1500,1700
OASIS HOMES CONSTRUCTION	212 ORIOLE COURT	HERCULES	1500,1700
PANOPLY ENTERPRISES	166 STARLING WAY	HERCULES	1500,1700
R & T MASONARY	118 STANLEY COURT	HERCULES	1500,1700
RAYMOND'S ENTERPRISES	2253 REDWOOD ROAD	HERCULES	1500,1700

RICHARD MACCARTER CONSTRUCTION	151 ORIOLE COURT	HERCULES	1500,1700
SUPERIOR PAINTING	355 NEWBURY CT.	HERCULES	1500,1700
TRUMP'S HOME MAINTENANCE	1907 REDWOOD ROAD	HERCULES	1500,1700
V. G. ENTERPRISES	121 CARDINAL WAY	HERCULES	1500,1700
VERNON LEE LANDSCAPE MAINT. SERVICE	175 MANZANITA PLACE	HERCULES	1500,1700
W. LEE PROPERTY MAINTENANCE	1846 PHEASANT DRIVE	HERCULES	1500,1700
GARY L COMPTON	127 FARRAGUT STREET	HERCULES	1800,1700

14 Motor Freight

WEST COAST CABLE SERVICES	121 DAISY COURT	HERCULES	4900
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15 Furniture/Wood Manufacturing and Refinishing

16 Heavy Metal Users

17 Printing/Ceramics

COMPUTER GRAPHICS TYPESETTING	31 GLENWOOD	HERCULES	2600,2700
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18 Cleaning Agents/Domestic Manufacturing

19 Other Manufacturing

20 Paper Industry

21 Analytical and Clinical Laboratories

AUNG COMPUGRAPHICS & ILLUSTRATIONS	299 STARLING WAY	HERCULES	
MINDY FAWN NIUALIKU DESIGNS	2050 NEIL CIRCLE	HERCULES	
NEW FRONTIERS	133 STARLING WAY	HERCULES	
RUSH GRAPHICS	1265 HERCULES AVENUE	HERCULES	
CAMI GRAPHICS	289 VIOLET ROAD	HERCULES	
CAROLYN COSTALES M.S.	157 NEWBURY	HERCULES	8000
CREEKSIDE FAMILY DENTISTRY	1511 SYCAMORE AVE. STE A	HERCULES	8000
DIAGNOSTIC DIRECTIONS	125 WORTHING	HERCULES	8000
DRS. FRANK & KATRINA ZISMAN, OPTOME	1500 SYCAMORE AVE. STE B1	HERCULES	8000
HEALTH SERVICE SPECIALIST	P.O. BOX 5201	HERCULES	8000
HERCULES CHIROPRACTIC CENTER	1581 SYCAMORE AVE STE #4	HERCULES	8000
HERCULES INTERNAL MEDL ASSOC.	1581 SYCAMORE AVE. #6	HERCULES	8000
HERCULES MEDICAL GROUP	1500 SYCAMORE PLACE STE A	HERCULES	8000
HERCULES PET CLINIC	1511 SYCAMORE AVE. STE B	HERCULES	8000
JOHN B WAYLAND-D.D.S.	1500 SYCAMORE AVE STE. B7	HERCULES	8000
ORAL DENTAL CRAFT STUDIO	P.O. BOX 5460	HERCULES	8000
TIN PO HO	228 APPOLLO #7	HERCULES	8000

22 Educational and Vocational Shops

C & D EQUIPMENT RENTAL	1280 SANTA FEE	HERCULES	
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SOCIALLY YOURS	148 HALSEY COURT	HERCULES	5000,5200
A & J TRADING	218 CORONADO STREET	HERCULES	5000,5200
ALL THAT GLITTERS	223 APOLLO #2	HERCULES	5000,5200
AMEREX INSTRUMENTS INC.	175 VIOLET ROAD	HERCULES	5000,5200
ASIAN FOOD MART-CREEKSIDE SPNG CTR	1511-K SYCAMORE	HERCULES	5000,5200
AUSPEX INTERNATIONAL INC.	1500 SYCAMORE AVE STE B-8	HERCULES	5000,5200
AVON SALES-BEVERLY A GEISLER	P.O. BOX 5236	HERCULES	5000,5200
BEAUTY CUT (B.U.T. CUT)	844 WILLOW AVENUE #A7	HERCULES	5000,5200
BEAUTY MASTERS INC.	1500 SYCAMORE PL STE B-2	HERCULES	5000,5200
BILLS BASKETS & COLLECTIBLES	292 VIOLET ROAD	HERCULES	5000,5200
CHUKU IMPORTS & EXPORTS	4 MANCHESTER	HERCULES	5000,5200
CLARA'S CHINA PAINTING	271 SPARROW	HERCULES	5000,5200
CLASSIC INTERIOR DESIGN	118 CATALPA COURT	HERCULES	5000,5200
COTTONTALES	1581 SYCAMORE AVE. STE 10	HERCULES	5000,5200
DBA: ORIENTAL FOOD CENTER	1500 SYCAMORE AVENUE	HERCULES	5000,5200
DEAN DOLAN/SELLING FLOWERS	145 BEECHNUT	HERCULES	5000,5200
DEE'S TRAVILIN BOUTIQUE	55 CRYSTAL CIRCLE	HERCULES	5000,5200
DIAMOND FIL - AM VIDEO	1581 SYCAMORE AVE #9a -2	HERCULES	5000,5200
DYNAMIC SOUND AND LIGHTING CO.	448 SPARROW DRIVE	HERCULES	5000,5200
ELITE FINE ART	308 WEYMOUTH	HERCULES	5000,5200
FAIRMONT FABRICS	115 JARVIS LANE	HERCULES	5000,5200
FAST DRAW TOOL COMPANY	402-4 OLYMPUS	HERCULES	5000,5200
FLORAL ELEGANCE BY MELVENA	157 SHEPARD STREET	HERCULES	5000,5200
GOLDEN PACIFIC TIME CO., INC.	P.O. BOX 5310	HERCULES	5000,5200
HAPPY ELF'S BOUTIQUE	268 STARLING WAY	HERCULES	5000,5200
HERCULES FLORIST & GIFTS	1511 SYCAMORE AVENUE	HERCULES	5000,5200
HERCULES POOL AND SPA	1263 CANTERBURY	HERCULES	5000,5200
INTERNATIONAL HOUSE OF GIFTS	2192 LUPINE DRIVE	HERCULES	5000,5200
JEWEL TECH CORPORATION	1288 HERCULES AVENUE	HERCULES	5000,5200
LA BUJOUX	1266 CANTERBURY STREET	HERCULES	5000,5200
LANETTE'S XMAS BOUTIQUE	1858 PHEASANT DRIVE	HERCULES	5000,5200
LENCHO'S GIFT PRODUCTS	154 ORCHID COURT	HERCULES	5000,5200
LITO & ESTRELLA BATERINA FURNITURE	2244 PHEASANT DRIVE	HERCULES	5000,5200
MAGIC MOVIES OF HERCULES	1511 SYCAMORE ST. STE J	HERCULES	5000,5200
MEANINGFUL MOMENTS	118 SHEPARD STREET	HERCULES	5000,5200
MOBI DESIGNS	711 DEVONWOOD	HERCULES	5000,5200
NONIA'S GIFT BASKETS	P.O. BOX 5023	HERCULES	5000,5200
POWER QUALITY RECORDS	601 WINDSOR STREET	HERCULES	5000,5200
R & R INTERNATIONAL TRADING	2193 REDWOOD ROAD	HERCULES	5000,5200
R B GENERAL MERCHANDISING	367 VIOLET ROAD	HERCULES	5000,5200
RALEY'S #342	1590 SYCAMORE AVENUE	HERCULES	5000,5200
ROSES ARE GIFTS	523 VALLEY RUN	HERCULES	5000,5200
SIERRA PACIFIC SPACESAVER, INC.	875 ALFRED NOBEL DR STE J	HERCULES	5000,5200
STALLION ENTERPRISES	142 GLENWOOD	HERCULES	5000,5200
STYLISTIC BEAUTY SUPPLY	1611-E SYCAMORE	HERCULES	5000,5200
SUNRISE CLOTHING OUTLET	1819 PHEASANT DRIVE	HERCULES	5000,5200
SUNSHINE JEWELRY	277 SPARROW DRIVE	HERCULES	5000,5200
T & S GIFTS	1559 PARTRIDGE DRIVE	HERCULES	5000,5200
VICTORIOUS PROMOTIONS INTERNATIONAL	1500 SYCAMORE AVE STE B-4	HERCULES	5000,5200
VIDEO SCENE	1500 SYCAMORE AVENUE	HERCULES	5000,5200
VIDEO SCENE OF HERCULES	1500 SYCAMORE AVE. #A-1	HERCULES	5000,5200
VIDEOS 2 U	844 WILLOW AVE. A-6	HERCULES	5000,5200

WILLIAMS SPORTING GOODS	169 VIOLET ROAD	HERCULES	5000.5200
WONG'S TRADING CO.	124 MARIGOLD DRIVE	HERCULES	5000.5200
ZOILLO S. GABRIEL	115 OLIVE COURT	HERCULES	5000.5200

CHESSE CAFE	1511-M SYCAMORE AVENUE	HERCULES	Misc.
EMANATIONS INTERIOR DECORATING	803-3 ORION DRIVE	HERCULES	Misc.
STATON PRODUCTIONS	406-7 OLYMPUS	HERCULES	Misc.
LOARD'S ICE CREAM & CANDIES INC.	1511 M SYCAMORE	HERCULES	Misc.
LUCKY STORE #52	1551 SYCAMORE AVENUE	HERCULES	Misc.
LULU'S FOODS & PASTRIES	32 GLENWOOD	HERCULES	Misc.
M & B PASTRIESZ	163 FINCH	HERCULES	Misc.
WILLOW GLEN APARTMENTS	1231 WILLOW AVENUE	HERCULES	Misc.
WILSON MAIL ORDER	215-6 APOLLO	HERCULES	Misc.
AGILE	825 ALFRED NOBEL SUTTE A	HERCULES	Misc.
BURGERAMA	1581 SYCAMORE AVE. #8	HERCULES	Misc.
CAFE NOBEL	825 ALFRED NOBEL DRIVE	HERCULES	Misc.
HERCULES ROUND TABLE PIZZA	1511-D SYCAMORE AVENUE	HERCULES	Misc.
SWEET SATISFACTION BAKERY	1611-D SYCAMORE AVENUE	HERCULES	Misc.
VALLEY ICE CREAM & DELI	1500 SYCAMORE PL. STE B-5	HERCULES	Misc.
HEALTHCARE PROVIDERS REGISTRY	115 FIR COURT	HERCULES	Misc.
HERCULES BEAUTY ACADEMY	1500 SYCAMORE PL. STE 2-B	HERCULES	Misc.
BARBARA'S APPAREL ODYSSEY	187 COLUMBINE PLACE	HERCULES	Misc.
BASKET CASES	102 WHALER CIRCLE	HERCULES	Misc.
BIO RAD HAVA SNAK	1000 ALFRED NOBEL DRIVE	HERCULES	Misc.
COLLIN'S FOOD ETC.	844 WILLOW AVE. SUTTE A-1	HERCULES	Misc.
DEE'S	103 BUCKLEY	HERCULES	Misc.
DRAGON TERRACE	1581 SYCAMORE AVENUE #1	HERCULES	Misc.
EAST BAY PATROL	P.O. BOX 5162	HERCULES	Misc.
EBONE DESIGNER CHILDREN WEAR	181 DECATUR COURT	HERCULES	Misc.
FAMILY HAIR CUTTERY	1511 SYCAMORE AVE STE L	HERCULES	Misc.
FRANCES FOOD SERVICES (FFS)	118 LOCUST COURT	HERCULES	Misc.
HARWOOD PRODUCTIONS	2175 REDWOOD ROAD	HERCULES	Misc.
JAMMALLOW'S PIZZA & PASTA	844 WILLOW AVENUE A-11	HERCULES	Misc.
MRS. G'S DONUTS	844 WILLOW AVENUE A-10	HERCULES	Misc.
SARA'S BAKERY	157 MARIGOLD DRIVE	HERCULES	Misc.
SHEILA M PETRAKIS	1012 CHELSEA	HERCULES	Misc.
SUNFLOWER BAKERY	1500 SYCAMORE AVE STE B-3	HERCULES	Misc.
THE BIG PICTURE	166 COLUMBINE PLACE	HERCULES	Misc.
THE CAKE PAN	183 SEQUOIA ROAD	HERCULES	Misc.
THRIFTY DRUG & DISCOUNT STORE #686	1621 SYCAMORE AVENUE	HERCULES	Misc.
VERY BERRY YOGURT	1522 SYCAMORE, STE. F	HERCULES	Misc.

EXPIRED BUSINESS LICENSE

ARROW DESIGN	P.O. BOX 5572	HERCULES
C C S	708 WINDSOR	HERCULES
CLASSIC DETAIL	P.O. BOX 5054	HERCULES
CLUB CONNECTION	145 TERRACE	HERCULES
D & B INSTALLATIONS	970 VALLEY RUN	HERCULES
DESIGNER HOMES	1575 SWALLOW WAY	HERCULES
DYNAMIK	1032 CANTERBURY	HERCULES
EARTH MOTHER DESIGNS	880 VALLEY RUND	HERCULES
EVENT MERCHANDISING	1708 PHEASANT DRIVE	HERCULES
EXCEL DIVERSIFIED SERVICES INC.	1641 SWALLOW WAY	HERCULES
HERCULES ENERGY RESEARCH CENTER	560 RAILROAD AVENUE	HERCULES
HOME SERVICE MECHANIC	109 COTTONWOOD COURT	HERCULES
J C COMPANY	265 NEWBURY STREET	HERCULES
JIM I. JUACHON	232 BEECHNUT DRIVE	HERCULES
KING OIL	133 BOBOLINK WAY	HERCULES
LIU'S INVESTMENT CO.	112 WALNUT COURT	HERCULES
MAGNA MATER ENTERPRISES	#90 GLENWOOD/VILLAGE PARK	HERCULES
MARJORIE VINES	151 BEECHNUT DRIVE	HERCULES
MCCALL & ASSOCIATES	100 TERRACE	HERCULES
MICHAEL OVERALL PAINTING	161 SKELLY	HERCULES
MUSIC RESEARCH INSTITUTE	560 RAILROAD AVENUE	HERCULES
NGUYEN ASSOCIATES	118 LOCUST COURT	HERCULES
NLI	P.O. BOX 5696	HERCULES
PACIFIC ENTERPRISES	6 WORCESTER STREET	HERCULES
PETALS	127 PINOLE STREET	HERCULES
PRETTY THINGS	112 SHEPARD STREET	HERCULES
RAINBOW TRADING CO.	P.O. BOX 5041	HERCULES
RAM SOFTWARE	2198 LUPINE ROAD	HERCULES
RBI MANAGEMENT INC.	1231 WILLOW AVE E-1	HERCULES
RJC INTERNATIONAL SERVICES	1500 SYCAMORE PL STE B-10	HERCULES
RULE TRUCKING	346 LILAC CIRCLE	HERCULES
SEEKO ASSOCIATES	157 SKELLY AVENUE	HERCULES
SUN VALLEY TRADING COMPANY	112 WALNUT COURT	HERCULES
TELCO ENTERPRISES	328 LILAC CIRCLE	HERCULES
THAGARD RESEARCH CORPORATION	560 RAILROAD AVENUE	HERCULES
THE BRASS EXECUTIVE	193 PEARCE	HERCULES
TOUCAN SERVICES	1115 WILLIAMS STREET	HERCULES
VISUAL MODE LTD.	1641 SWALLOW WAY	HERCULES

TABLE A-2. SMALL QUANTITY GENERATOR WASTE
PROJECTED YEAR 2000 BY WASTE CATEGORY

<u>Waste Type</u>	<u>Waste Generation (Tons/Year)</u>		
	<u>1990</u>	<u>2000</u>	<u>2000 W/Waste Reduction</u>
Arsenic Wastes	0	0	0
Cyanide Wastes	0.32	0.36	0.35
Dry Cleaning (Filtration Residue)	17.79	20.28	20.08
Empty Pesticide Containers	0.68	0.77	0.75
Heavy Metal Dust	0.29	0.33	0.25
Heavy Metal Solutions	0	0	0
Heavy Metal Waste Material	0.54	0.62	0.46
Ignitable Paint Wastes	10.03	11.43	10.86
Ignitable Wastes	14.66	16.71	15.21
Ink Sludges Containing Chromium or Lead	0.04	0.05	0.04
Mercury Wastes	0.14	0.16	0.12
Other Reactive Wastes	1.90	2.17	2.13
Paint Waste Containing Heavy Metals	0.21	0.24	0.18
Pesticide Solutions	1.09	1.24	1.22
Photographic Wastes	2.40	2.74	2.07
Solvent Still Bottoms	0.24	0.27	0.25
Spent Plating Wastes	0.30	0.34	0.25
Spent Solvents	29.52	33.65	30.62
Solutions or Sludges Containing Silver	0	0	0
Strong Acids or Alkalies	11.46	13.06	9.79
Used Lead-Acid Batteries	16.95	19.32	14.49
Waste Formaldehyde	33.23	37.88	36.36
Waste Inks Containing Flammable Solvents or Heavy Metals	0.38	0.43	0.32
Waste Pesticides	3.15	3.59	3.52
Wastewater Containing Heavy Metal Sludges	0.08	0.09	0.07
Wastewater Containing Wood Preservatives	0	0	
Wastes Containing Ammonia	1.35	1.54	1.51
Other	44.88	51.16	*

*Waste reduction factor not available for this waste type.

TABLE A-3

SQG INDUSTRY GROUP AND WASTE GENERATION INFORMATION

Industry Groups	Total No. of Companies in the City of Hercules	Waste Generation (MT/YR)	Assigned SIC Code Group	Types of Wastes Produced	% of Total Volume	Volume of Waste by each Waste Type (MT/YR)
Pesticide End Users	0	0		1) Empty Pesticide Containers 2) Pesticide Solutions 3) Waste Pesticides 4) Other	1) 25 2) 69 3) 46 4) 1	1) 0 2) 0 3) 0 4) 0
Pesticide Application Services	2	1.8	100	1) Empty Pesticide Containers 2) Pesticide Solutions 3) Waste Pesticides 4) Other	1) 34.8 2) 55 3) 9.6 4) 1	1) 0.62 2) 0.99 3) 0.17 4) 0.02
Chemical Manufacturing	3	9.6	2800, 8200	1) Cyanide Wastes 2) Heavy Metal Dust 3) Heavy Metal Waste Material 4) Ignitable Wastes 5) Other Reactive Wastes 6) Solvent Still Bottoms 7) Spent Solvents 8) Strong Acids and Alkalies 9) Other	1) 1 2) 2.9 3) 5.2 4) 18 5) 1.4 6) 2.1 7) 48 8) 20 9) 21	1) 0.96 2) 0.27 3) 0.49 4) 1.72 5) 0.13 6) 0.20 7) 4.60 8) 1.92 9) 0.20
Wood Processing	0	0	2400	1) Wastewater Containing Wood Preservatives	1) 100	1) 0

SQG INDUSTRY GROUP AND WASTE GENERATION INFORMATION

Industry Groups	Total No. of Companies in the City of Hercules	Waste Generation (MT/YR)	Assigned SIC Code Group	Types of Wastes Produced	% of Total Volume	Volume of Waste by each Waste Type (MT/YR)
Formulators	0	0	2900	1) Empty Pesticide Containers 2) Heavy Metal Dust 3) Cyanide Wastes 4) Heavy Metal Solutions 5) Ignitable Wastes 6) Ink Sludges Containing Chromium or Lead 7) Other Reactive Wastes 8) Pesticide Solutions 9) Spent Solvents 10) Strong Acids or Alkalies 11) Waste Pesticides 12) Other	1) 2.1 2) 3.6 3) 1 4) 2.4 5) 15 6) 3.3 7) 3 8) 1.8 9) 53 10) 14 11) 1.4 12) 1	1) 0 2) 0 3) 0 4) 0 5) 0 6) 0 7) 0 8) 0 9) 0 10) 0 11) 0 12) 0
Laundries	18	16.2	7200	1) Dry Cleaning Filtration Residues 2) Other	1) 99.8 2) 1	1) 16.17 2) 0.16
Other Services Personal and Business Services	52	36.4	7300	1) Ignitable Wastes 2) Spent Solvent 3) Strong Acids & Alkalies 4) Wastes Containing Ammonia 5) Wastes Containing Formaldehyde 6) Other	1) 6.6 2) 1.3 3) <1 4) 3.4 5) 83 6) 5.4	1) 2.40 2) 0.47 3) 0.36 4) 1.23 5) 30.21 6) 1.96

SQG INDUSTRY GROUP AND WASTE GENERATION INFORMATION

Industry Groups	Total No. of Companies in the City of Hercules	Waste Generation (MT/YR)	Assigned SIC Code Group	Types of Wastes Produced	% of Total Volume	Volume of Waste by each Waste Type (MT/YR)
Photography	0	0	7332, 7333, 7395, 8411	1) Ignitable Paint Wastes 2) Ignitable Wastes 3) Photographic Wastes 4) Solutions or Sludge 5) Spent Solvents 6) Strong Acids & Alkalines 7) Other	1) 1 2) 1 3) 49 4) 48 5) 2.5 6) 1 7) 1	1) 0 2) 0 3) 0 4) 0 5) 0 6) 0 7) 0
Textile Manufacturing	0	0	0722, 1600, 1611, 1623, 1629, 1794, 3711, 3732, 4210, 4212, 4213, 4224, 4469, 4478, 4789, 5171, 5270, 5499, 5500, 5531, 5541, 5551, 5561, 7531, 7538, 7542, 7692, 7699, 7720,	1) Solvent Still Bottoms 2) Spent Solvents 3) Other	1) 18 2) 78 3) 4.8	1) 0 2) 0 3) 0
Equipment Repair	6	3	4600, 4800, 7500, 7600	1) Ignitable Wastes 2) Ignitable Paint Wastes 3) Spent Solvents 4) Strong Acids & Alkalies 5) Other	1) 14 2) 1 3) 78 4) 3.8 5) 4	1) 0.42 2) 0.03 3) 2.34 4) 0.11 5) 0.12

SQL INDUSTRY GROUP AND WASTE GENERATION INFORMATION

WASTE GENERATION INFORMATION						
Industry Groups	Total No. of Companies in the City of Hercules	Waste Generation (MT/YR)	Assigned SIC Code Group	Types of Wastes Produced	% of Total Volume	Volume of Waste by each Waste Type (MT/YR)
Vehicle Maintenance	3	17.1	1600	1) Ignitable Paint Wastes 2) Ignitable Wastes 3) Paint Wastes Containing Heavy Metals 4) Spent Solvents 5) Strong Acids & Alkalies 6) Used Lead Acid Batteries 7) Other	1) 1 2) 1 3) 1 4) 10.6 5) 3 6) 86 7) 1	1) 0.17 2) 0.17 3) 0.17 4) 1.81 5) 0.51 6) 14.70 7) 0.17
Construction	26	10.4	1500, 1700	1) Ignitable Paint Wastes 2) Ignitable Wastes 3) Spent Solvents 4) Strong Acids & Alkalies 5) Other	1) 48 2) 9.2 3) 30 4) 1.4 5) 11.1	1) 5.00 2) 0.96 3) 3.12 4) 0.15 5) 1.15
Motor Freight Terminals	1	1.1	4900	1) Ignitable Paint Wastes 2) Spent Solvents 3) Used Lead-Acid Batteries	1) 25 2) 11 3) 64	1) 0.28 2) 0.12 3) 0.71

SQG INDUSTRY GROUP AND WASTE GENERATION INFORMATION

Industry Groups	Total No. of Companies in the City of Hercules	Waste Generation (MT/YR)	Assigned SIC Code Group	Types of Wastes Produced	% of Total Volume	Volume of Waste by each Waste Type (MT/YR)
Metal Manufacturing	1	1.7	3300, 3400, 3500, 3600, 3800	1) Cyanide Wastes	1) 2.5	1) 0.04
				2) Ignitable Paint Wastes	2) 1.9	2) 0.03
				3) Other Reactive Wastes	3) 1	3) 0.02
				4) Paint Wastes Containing Heavy Metals	4) 1	4) 0.02
				5) Solvent Still Bottoms	5) 2.5	5) 0.02
				6) Spent Plating Wastes	6) 7.5	6) 0.04
				7) Spent Solvents	7) 61.6	7) 0.12
				8) Strong Acids & Alkalies	8) 19.5	8) 1.05
				9) Wastewater Sludge Containing Heavy Metals	9) 3.7	9) 0.07
				10) Ignitable Waste	10) 1	10) 0.02
				11) Other	11) 2.2	11) 0.26
Furniture/Wood Manufacturing and Refinishing	0	0	2434, 2435, 2436, 2492, 2511	1) Ignitable Paint Wastes	1) 44	1) 0
				2) Ignitable Wastes	2) 19	2) 0
				3) Solvent Still Bottoms	3) 3.5	3) 0
				4) Spent Solvents	4) 27	4) 0
				5) Other	5) 6.4	5) 0

SQG INDUSTRY GROUP AND STE GENERATION INFORMATION

Industry Groups	Total No. of Companies in the City of Hercules	Waste Generation (MT/YR)	Assigned SIC Code Group	Types of Wastes Produced	% of Total Volume	Volume of Waste by each Waste Type (MT/YR)
Printing and Ceramics	6	4.2	2600, 2700	1) Cyanide Wastes 2) Ignitable Wates 3) Ink Sludge Containing Chromium or Lead 4) Photographic Wastes 5) Spent Plating Wastes 6) Spent Solvents 7) Strong Acids or Alkalies 8) Waste Ink Con- taining Solvents or Heavy Metals 9) Other	1) 4 2) 1.5 3) 1 4) 52 5) 5.6 6) 24 7) 6 8) 8.5 9) 1.6	1) 0.16 2) 0.06 3) 0.04 4) 2.18 5) 0.23 6) 1.00 7) 0.25 8) 0.35 9) 0.06
Cleaning Agents and Cosmetic Manufacturers	0	0	2841 through 2844	1) Heavy Metal Dust 2) Ignitable Wastes 3) Pesticide Solutions 4) Solvent Still Bottom 5) Spent Solvents 6) Strong Acids or Alkalies 7) Other	1) 1 2) 16 3) 24 4) 1 5) 27 6) 31 7) 2	1) 0 2) 0 3) 0 4) 0 5) 0 6) 0 7) 0
Other Manufacturing	0	0		1) Arsenic Wastes 2) Heavy Metal Wastes 3) Ignitable Wastes 4) Solvent Still Bottom 5) Spent Solvents 6) Other	1) 2 2) 8 3) 21 4) 1 5) 66 6) 1.8	1) 0 2) 0 3) 0 4) 0 5) 0 6) 0

SQG INDUSTRY GROUP AND WASTE GENERATION INFORMATION

Industry Groups	Total No. of Companies in the City of Hercules	Waste Generation (MT/YR)	Assigned SIC Code Group	Types of Wastes Produced	% of Total Volume	Volume of Waste by each Waste Type (MT/YR)
Paper Industry	0	0	2611, 2621, 2631, 2661	1) Ignitable Wastes 2) Solvent Still Bottoms 3) Spent Solvents 4) Strong Acid & Alkalies 5) Other	1) 24 2) 1 3) 68 4) 7.5 5) 1.1	1) 0 2) 0 3) 0 4) 0 5) 0
Educational and Vocational Shops	0	0	8211, 8249, 8331	1) Ignitable Wastes 2) Ignitable Paint Wastes 3) Other Reactive Wastes 4) Spent Solvents 5) Strong Acid or Alkalies 6) Other	1) 27 2) 15 3) 13 4) 23 5) 19 6) 3.9	1) 0 2) 0 3) 0 4) 0 5) 0 6) 0
Analytical and Clinical Laboratories	12	13.2	8000	1) Ignitable Paint Wastes 2) Ignitable Wastes 3) Mercury Waste 4) Other Reactive Wastes 5) Spent Solvents 6) Strong Acids & Alkalies 7) Other	1) 23 2) 24 3) 1 4) 12 5) 48 6) 14 7) 1	1) 3.03 2) 3.16 3) 0.13 4) 1.58 5) 6.33 6) 1.84 7) 0.13

SQG INDUSTRY GROUP AND WASTE GENERATION INFORMATION

Industry Groups	Total No. of Companies in the City of Hercules	Waste Generation (MT/YR)	Assigned SIC Code Group	Types of Wastes Produced	% of Total Volume	Volume of Waste by each Waste Type (MT/YR)
Wholesale and Retail Sales	55	38.5	5000, 5200	1) Ignitable Paint Wastes	1) 12	1) 4.62
				2) Ignitable Wastes	2) 1	2) 0.38
				3) Spent Solvents	3) 18	3) 6.93
				4) Strong Acids or Alkalies	4) 11	4) 4.23
				5) Waste Pesticides	5) 7	5) 2.69
				6) Other	6) 95	6) 36.57

**ECONOMIC DEVELOPMENT ELEMENT
OF THE GENERAL PLAN**

IX.

**APPROVED BY THE CITY COUNCIL
JANUARY 8, 1991**

IX. ECONOMIC DEVELOPMENT

I. INTRODUCTION

A. Background

Although almost 90 years old, in the last 15 years the City of Hercules has completed one major transition and has begun another. The City of Hercules was founded in the 1870's as a company town; and the production of dynamite, and later fertilizer, dominated the economic aspects of life in the town. In 1974, the town moved through its first major transition, when the production of fertilizer ceased, the company town framework was dismantled, and the land surrounding the plant equipment was sold to private developers. Since then, Hercules has been one of the most rapidly growing cities in California; the 1975 population of about 150 rose to approximately 15,000 in mid-1989. This rapid growth included two major annexations (Marsten and Hanna Ranches), and was fueled, in part by rapid employment growth in San Francisco, Oakland, and Central Contra Costa County. This rapid growth also provided revenue (project review fees and increased property taxes), allowing the "new" Hercules to provide full municipal services.

During this rapid residential development, the retail, commercial, and industrial sectors of the community developed only minimally. While a small shopping center (Sycamore Place) was built in the early 80's, the first community shopping center (Creekside) opened in 1983; the first buildings in the North Shore Business Park opened in 1987. By 1989, non-residential development in Hercules provided only about 700 jobs, requiring most of the employed residents to seek employment in other cities.

In 1988, the City began its second major transition. Development plans for most of the larger residential properties had been approved, and most major projects had been completed. Full "build-out" of the residential properties could be expected in 3-4 years. At the same time, the revenue picture for the City was also shifting from a "growth" basis to a "maintenance" basis. Revenue associated with development activity was decreasing substantially, and this decrease was expected to continue. In addition, employed residents continued to work at jobs in other cities, and the time and difficulty involved in commuting continued to increase as congestion on Bay Area freeways continued to worsen. All of these factors focused the City's attention on the remaining, vacant non-residential properties.

In August, 1989, the City Council initiated a process for establishing an economic development program in the City and, as the first phase, appointed 21 members to an Economic Development Strategy Planning Task Force. This Task Force met monthly (or more often) through May, 1990. The Task Force reviewed data on development potential, environmental issues, and City finances, and recommended a series of development goals, strategies, and objectives to the City Council. In June, 1990, the City Council adopted the City of Hercules Economic Development Strategy Plan.

The Plan summarizes the data and analysis discussed by the Task Force into a set of major findings as shown in the following section.

B. Major Findings of the Economic Development Strategy Planning Task Force

1. City Resources and Service Delivery

- Development in the Redevelopment Agency area has the potential to generate substantial new revenue;
- City budget faces a shortfall as infrastructure and maintenance service requirements and costs rise faster than revenues;
- City budget is now dependent on interest earnings;
- City needs to look at new traditional and non-traditional revenues;
- New bond issue could fund needed capital improvements;
- New development will not solve City budget problem (due, in part, to low property tax allocation); but it may contribute to solution;
- Over the last decade, community development fees have been a major source of revenue;
- Slow revenue growth will constrain City services;
- The ability of households to absorb new taxes should be examined.

2. Demographics

- Community desires new shopping opportunities and services;
- Community is culturally and ethnically diverse;
- Employed residents commute to work outside City;
- Median income is between \$51,000 and \$60,000;
- Residents are well-educated (75% attended college), and many pursue professional careers (31% of workers);
- Residents expect high level of police, fire and recreation services;
- Retail spending goes outside the City, and little comes in from outside;
- Small daytime population provides little support to local businesses.

3. Environmental

- New development may not degrade regional air quality;
- New businesses may involve some use of hazardous materials, City and businesses must pro-actively manage;
- Refugio Creek corridor will be extended west of San Pablo Avenue;
- The bayfront offers opportunity for unique open space and development;
- The General Plan includes open space protection;

The Task Force adopted this finding in recognition of regulations adopted by the Bay Area Air Quality Management District that do not allow new businesses to cause an increase in air pollutant emissions.

4. Housing

- Approved residential projects are nearing build-out;
- Current housing offers limited range, few "affordable" or "top-end" units;
- Limited population constrains retail market;
- The City acknowledges an obligation to produce "affordable" housing;
- The cost to provide municipal services to the residential community exceeds revenue to City.

5. Land Use

- City General Plan calls for a balance of residential, retail, commercial and industrial development in the community;
- Commercial and industrial land is still available as a resource, however, benefits from industrial development are not likely to occur in the immediate future due to current market conditions;
- Commitment to balance development with open space is established by General Plan;
- Residential land in current General Plan is approaching build-out.

6. Other Infrastructure

- Additional sewage treatment capacity is critical for City to develop its retail, commercial and industrial base;
- Activated sludge sewage treatment technology could price land out of the market, alternative technology is under study;
- Cost to provide additional sewage treatment capacity is currently under study;
- Current maintenance level for public facilities is high;
- Roads, facilities, etc. increasingly need maintenance.

7. Sphere of Influence

- Development will require wastewater treatment capacity and additional City and Fire District services;
- New development in Sphere of Influence will not solve financial crisis;
- Tax sharing agreement requires joint planning with County;
- There is a need to control development along City's borders;
- There will be no new access to Highway 4 until freeway is completed.

8. Transportation

- I-80/SR 4 junction provides regional access and is a potential congestion point;
- Improvements to local streets to expand capacity are required;
- Local and regional mitigation fees will likely be required for new development;
- Resolution or continuation of congestion will have high impact on future land use;

- State and regional agencies make transportation decisions that affect Hercules and can impact City's ability to develop retail, commercial and industrial base.

C. Purpose

This Element provides the policy basis and conceptual framework for pursuing economic development in Hercules. It provides direction for both short-term and long-term economic development activities. The City intends to pursue economic development in order to promote and maintain the unique quality of life in Hercules and to achieve financial self sufficiency.

The Plan is based on the Economic Development Strategy Plan, which found that economic development would be consistent with, and in fact, would support the overall General Plan objectives and policies (as stated in Chapter I of the General Plan). These objectives and policies call for development of a community that provides a balance among residential and non-residential land uses, among private and public services, and among developed areas and open space. This Element incorporates economic development into this context.

D. Authority

California law authorizes cities and counties to adopt General Plan Elements in addition to the seven required Elements. Section 65303 of the California Government Code states, "The General Plan may include any other Elements or address any other subjects which, in the judgement of the legislative body, relate to the physical development of the county or city." As discussed above, the City Council directed the preparation of this Element to establish city economic development goals and objectives as part of the City's fundamental set of policies.

E. Consistency with Other General Plan Elements

State law requires that all Elements of a General Plan must be internally consistent. The following paragraphs discuss the relationship and interconnections between this Element and the other Elements of the Hercules General Plan.

1. Land Use Element

The objectives and policies in the Land Use Element are generally consistent with the objectives and policies of this Element, in that they both provide for development of Hercules as a balanced community. Since this Element does not discuss development policies, intensities, or densities for any particular properties or areas, this Element does not present any conflicts with the Land Use Element. An update of the Land Use Element is scheduled for Winter/Spring of 1991; any minor inconsistencies will be resolved as part of that process.

2. Circulation/Scenic Highways Element

The Circulation Element calls for the provision of an adequate system of streets throughout the City, and the provision of public transit. These objectives are consistent with this Element, which calls for provisions of adequate infrastructure (including streets and roads), to serve new non-residential development. Since this Element does not discuss

alignments, design standards or, any specific streets, this Element does not conflict with the Circulation Element. The Circulation Element is scheduled for update in Winter/Spring 1991, and any minor inconsistencies will be resolved as part of that process.

3. Housing Element

The Housing Element calls for development of new housing, particularly affordable housing, as part of improving the balance between jobs and housing in the Bay Area. The Housing Element does not create any conflicts with this Element because it states that the City's need for housing through 1995 can be accommodated by development of existing residentially-designated areas, and the City currently has a substantial shortage of jobs (compared to the number of employed residents). These two Elements are also consistent in their goals and policies calling for the provision of new affordable housing in Hercules, since the Housing Element does not call for a conversion of non-residential land to residential use, and this Element acknowledges the need for providing affordable housing in Hercules. The Housing Element also calls for considering mixed use (housing and commercial) in the City; designating such an area would be consistent with this Element.

4. Open Space/Conservation Element

The Open Space Element calls for the preservation of public open space in the City, as well as protection of creek environments and the mitigation of geologic hazards. This Element is consistent with these policies because it acknowledges the importance of preserving and enhancing the City's open space system, and identifies the potential for use of Refugio Creek as a buffer area between residential and non-residential development.

5. Safety/Seismic Safety Element

The Safety Element calls for the protection of the public health and welfare through the mitigation of seismic, geological, fire, and flood hazards. This Element does not conflict with the goals and policies of the Open Space Element because it acknowledges the need to manage environmental concerns through the development review process, and does not call for developing non-residential areas in a manner that would create any threats to the public health or safety.

6. Noise Element

The Noise Element calls for protecting the residents of Hercules from excessive noise levels. It documents current and projected noise levels, and provides a summary table that relates land use to noise exposure criteria. This Element does not create any conflict with the Noise Element because it does not propose locating residential or non-residential development in a manner that would violate the noise criteria..

7. Hazardous Waste Element

The City Hazardous Waste Plan was adopted as an Element of the General Plan in October, 1990. It describes the amount and types of hazardous waste currently generated in the City, and recommends a regional approach to minimizing the amount of hazardous waste generated throughout West

Contra Costa County. This Element is consistent with the Hazardous Waste Plan because it calls for attracting industrial and other businesses that would not pose a significant threat to the public welfare, and the waste minimization goals and the Hazardous Waste Plan could help private industry lower production costs by substituting non-hazardous materials for hazardous materials in industrial process.

II. GOALS AND OBJECTIVES

A. Community Strengths and Weaknesses

The economic development strategy planning process began with a comprehensive review and analysis of the existing conditions in Hercules and the opportunities, resources, constraints and problems these conditions present to economic development. An accurate and realistic understanding of these "strengths" and "weaknesses" provide the necessary basis for successful economic development. In this context, the community strengths are those attributes which enhance, or contribute to the community's desirability. These characteristics can be utilized to promote economic development opportunities and need to be maintained over time as the basis for successful development. The community weaknesses show where work is needed and to appropriately target economic development efforts.

As identified by the economic development strategy planning process, strengths offered by Hercules for economic development include:

- Resident's high household income relative to other nearby areas.
- The affordable and attractive housing available in Hercules.
- The positive City Council attitude toward economic development.
- The high level of civic pride evidenced by residents.
- Hercules' proximity and ease of access to other Bay Area communities.
- The room available for expansion and abundant natural attributes of the Hercules location.
- The generally high quality of life available in Hercules.

Weaknesses identified through the strategy planning process include:

- Increasing traffic congestion in the City and on major highways.
- Existing limited business development and business diversity.
- Lack of adequate ongoing revenues to support City operations.
- Lack of strong a non-residential community identity.
- Infrastructure beginning to age and need rehabilitation.
- Need for additional child care and other community services.
- Need for education system improvement.

B. Economic Development Goal

The Economic Development Strategy Planning Task Force began the planning process by identifying the overall goal of balanced development and maintenance of the community's high quality of life. At the outset, the Task Force took the approach of analyzing the existing obstacles to the achievement of these goals. The Task Force developed a problem statement which incorporates the specific community issues constraining balanced development and the community's ability to sustain the high quality of life. These problem statements are:

- Revenue constraints affect the City's ability to meet existing and future needs for service.
- A lack of business affects City revenues, and a lack of business diversity may affect residents' perceptions of the quality of life in Hercules.
- Hercules lacks a strong non-residential community identity and image as perceived by the Bay Area, as well as an internal sense of community.
- The residential sector of the community has reached build-out and has created a large demand for services.
- Regional influences will, to an increasing extent, impact future development in Hercules.
- Environmental constraints must be weighed in the process of responsible, long term economic development.

After thorough analysis of these issues, the Task Force developed the comprehensive goal statement for economic development planning and programs in Hercules:

Generate increased revenue and business activity while maintaining Hercules' special quality of life.

C. Economic Development Objectives

Economic development in Hercules is intended to leverage the community strengths for successful economic development, address the several community weaknesses identified previously, and to achieve several specific objectives. Identification of these objectives and a brief discussion follows.

1. New Retail Business Development

Hercules currently suffers from a lack of diversity and availability of goods and services desired and needed by residents. In the Hercules Household Survey, conducted as part of the economic development strategy planning process, residents expressed a strong desire for the type and variety of shopping opportunities normally available in suburban communities. The high level of household income available in Hercules indicates that residents transact a significant amount of taxable retail sales activity outside the community. This sales tax "leakage" represents a serious problem for Hercules since the post-Proposition 13 tax structure seriously restricts the available property tax revenues to support municipal operations. Most California cities rely heavily upon sales tax revenues for support of regular municipal operations.

The order of these objectives is taken from the Economic Development Strategy Plan.

Objective:

Reduce sales tax leakage, target specific retail businesses for development, provide on-going support to retail businesses, and provide the goods and services needed by residents.

2. City Revenue and Service Costs

Hercules is currently experiencing a serious revenue shortfall, with on-going revenues available to support City operations and services inadequate to meet the increasing needs for City services and the rising costs of providing services. This shortfall has its origins in the City's current (second) transition. In the 1970's and early to mid-1980's, City operations were funded by plentiful development service fee revenues, interest earnings on windfall refinery sales tax revenues and pre-Proposition 13 property taxes. Due to the rapid residential development, development service fees have provided as much as 40% of the City's total annual financial resources. These revenues have declined substantially and will continue to decline as Hercules approaches and then attains residential build-out.

With the substantial decline in development service revenue in Fiscal Year 1989-90, interest income became the primary source of City revenue. This is not a desirable municipal revenue structure since reliance upon interest income to fund routine, on-going municipal operations, in effect, "freezes" the reserve fund principal in order to earn the necessary interest income. Use of the reserve fund principal would cause rapid escalation of operating deficits.

Concurrent with the decline in operating revenues, Hercules is experiencing increases in the demands for services and the cost of meeting these demands. The population growth and the normal aging of the City's infrastructure have combined to restrict the City's ability to operate on a constrained revenue base. While the population has increased 15-20% annually since 1975, revenues have increased at a rate of only 2-5% annually. New revenue sources are critical to the City's on-going ability to meet the demands for services and to achieve the financial self-sufficiency required to ensure on-going maintenance of the community's high quality of life.

Objective:

Maximize the collection of existing revenue and adopt new on-going revenues, as needed, to continue providing quality City services; and, maintain and promote efficiency in City operations.

3. Human Resource Development

The economic development strategy planning process identified that the Hercules community and the residents themselves offer significant resources to support economic development. The community is well-maintained, aesthetically pleasing, and has a relatively low crime rate. Adequate community facilities are available or under development to serve the residents and a high level of community services and a wide

variety of recreational programs are offered by the City. These facilities and services assist in supporting the sense of community and are necessary to provide a desirable environment for economic development.

Hercules residents are highly educated and supportive of quality education. The demographic profile of Hercules residents suggests that Hercules residents offer a highly skilled labor pool for local business. The Economic Development Strategy Plan identifies that the high standards for community infrastructure, facilities and maintenance, the community life and the resident demographic profile are factors which can be promoted to make the community attractive to business and to attract economic development.

Objective:

Create a positive environment for economic development by maximizing human resource and community attribute potential. This objective includes promoting citizen involvement in the community and the educational system, and continuing to insure provision of adequate health, safety, recreation and social programs in the community.

4. New Industrial Business Development

The original intent for the development of the community as expressed in the General Plan identifies that business development would include a balance mix of commercial, retail and industrial businesses. This intent has not been realized, with business growth in all of these areas lagging behind the City's residential growth. Industrial sector development is important to the community in order to afford economic diversity and to provide jobs and an adequate daytime population in the City.

Achievement of the industrial sector development objective includes the identification of particular industrial businesses desired in the community and active efforts to promote and recruit these businesses. The Plan also identifies the need to develop criteria for management and regulation of industrial businesses to ensure that the businesses are compatible with the residential character of the community and do not expose residents to significant environmental risk.

Objective:

Target specific industrial businesses and actively promote industrial sector development. Clarify City standards for industrial development to insure that environmental quality standards are maintained and the overall quality of life is not degraded, without effectively, putting the City out of the market for new development.

5. Effective Management of Regional Influences Related to Economic Development

The current operating environment for cities is increasingly being impacted by the need to develop cooperative processes and solutions to problems region-wide. The City is no longer in a situation which allows the City to identify and implement solutions to problems such as traffic

flow, solid waste management and air quality on its own. These issues increasingly create impacts throughout the regional area.

In order to be effective, economic development in Hercules must be planned and implemented to provide for management of regional considerations. This includes measures to insure adequate infrastructure for sewage treatment, traffic flow and solid waste management. It also includes participation in the regional operating environment to ensure that the City's needs and interests are adequately represented. In addition, the City will need to effectively manage development in the Sphere of Influence to ensure maintenance of the quality of life in Hercules.

Objective:

Represent and promote local interest in the regional operating environment in order to support economic development.

6. Employment Development

Hercules residents have an extremely high rate of employment and many residents are employed in professional positions. There are currently few jobs available in Hercules businesses, particularly professional type jobs and many residents commute to San Francisco. This adds traffic to the freeway system and degrades residents' quality of life. Increasing the employment opportunities in Hercules will provide local jobs for residents and also increase the day time population in the City to support the City's retail businesses.

Objective:

Encourage local businesses to employ Hercules residents and target businesses for development which can offer jobs for Hercules residents.

7. Effective Economic Utilization of the Redevelopment Agency

The Hercules Redevelopment Agency was formed to complete a series of capital improvement projects designed to establish the infrastructure needed for development. The City's transition to a new stage in its development has created new needs. The community now needs to focus on the attraction of new development opportunities in order to effectively utilize the available land as a resource to attain its economic development goals. State redevelopment law provides redevelopment agencies with significant ability to induce development. The activity of the Redevelopment Agency is an important component of economic development and should be evaluated to insure that the Agency is being used in the most effective manner in order to promote economic development.

Objective:

Use the Redevelopment Agency to promote economic development.

8. New Commercial Development

As discussed previously, the General Plan calls for balanced development of the community. The commercial sector has been slow to develop, similar to the other business sectors. Commercial development offers the potential to increase the number of jobs in the community and to provide necessary business services to residents and to support services to other businesses. In addition, the Task Force reviewed the possibility of exploring some innovative concepts in the commercial business sector, building upon specific community needs and the promotion of community strengths. These could include review and evaluation of the potential for development of a sports/recreation center, a waterfront commercial area or leveraging the cultural diversity in Hercules to support a regional training and research facility.

Objective:

Attract and support new commercial business development to achieve community balance and create jobs.

9. Business Retention

Many Hercules businesses have had difficulty in sustaining their operations as a result of several factors. Business turnover has been a factor negatively influencing economic development. As previously discussed, the community currently lacks an adequate day time population to support local businesses. Many businesses need access to support services and programs which are currently not available in the community. In addition, specific design features of community business areas may constrain the visibility and access needed by many businesses.

Objective:

Retain and support existing businesses through creation of a positive business environment and through programs to strengthen and promote development of existing businesses.

III. POLICIES AND PROGRAMS

Achieving the goals and objectives outlined in Chapter II will not be easy. Hard work and patience will be required of the City Council, City Commissions, and City staff if the vision embodied in these goals and objectives is to be realized. Achieving these goals and objectives will, however, substantially contribute to the quality of life in Hercules. The following sections describe the policies that will shape the City's efforts to achieve these goals and objectives, and the programs that the City will perform to implement these policies.

A. Public Infrastructure Projects

The City of Hercules faces service capacity constraints in two critical public infrastructures: traffic, and sewage treatment. The major findings from the Economic Development Strategy Plan showed that these constraints can seriously impair the City's ability to achieve economic development.

1. Sewage Treatment

Policy Statement - The City of Hercules recognizes the need to provide sewage treatment capacity that is sufficient to treat wastewater from existing and foreseeable development in the City, without causing violations of water quality standards.

Program - Review alternatives for providing new wastewater treatment capacity and develop new capacity (including review of potential for obtaining capacity from adjacent facilities, identification of preferred treatment technology, identification of preferred financing method, environmental review, design and construction).

Schedule - Identify preferred technology and financing: mid-1991.
Complete Construction: mid-1993.

Responsible Department - City Manager's Office

2. Traffic on Local Streets

Policy - The City of Hercules will continue to monitor traffic improvement needs and will expand the capacity of local streets as required, in order to meet the traffic service standards in the Circulation Element and Growth Management Element (when adopted).

Program - Plan, design, and construct improvements to local streets, with project priority to be determined through the Capital Improvements Program budget process, based on existing and foreseeable congestion.

Schedule - On-going

Responsible Department - Department of Public Works

3. Transportation/Circulation Planning

Policy - Through the Circulation Element, the City will conduct and periodically update computer-based modeling of traffic operations on local streets at full build-out of the community.

Program - Review the 1987 City-wide Traffic Study, and update or replace the study as may be appropriate, in order to provide a reasonable description of local and regional traffic at full build-out of the City.

Schedule - Early-mid 1991

Responsible Department - Departments of Public Works and Planning

B. Business Retention and Promotion

The economic development strategy planning process identified that Hercules business have difficulty sustaining their operations due to several factors. Among these are inadequate visibility and promotion, lack of access to resources and information and a small daytime population available in the community. Several businesses have either left the community or must struggle to make their businesses viable. A legitimate program to promote retention and development of existing businesses by providing resources and services to the business community is an important aspect of a comprehensive economic development program.

Policy Statement: The City of Hercules will develop an on-going business retention and development program to make business assistance resources available to existing businesses in the community and to strengthen the Chamber of Commerce.

Program: Work with the Chamber of Commerce and other community business people to develop an action program to strengthen the Chamber of Commerce and to assist and promote existing business development. The program could include activities to provide direct business assistance resources to individual businesses; to review and revise the City's sign ordinance and signage programs; to develop and make available an information brochure on the community; to review and evaluate the needs of businesses and the conditions which encourage business activity; to expand Chamber of Commerce membership and participation; and to strengthen the Chamber of Commerce organization and member benefits.

Schedule: Mid-1991

Responsible Department: City Manager's Office

Policy Statement: The City of Hercules will continue to provide and encourage the community programs which support a positive business environment and will work toward greater visibility of the community to promote business activities.

Program: Provide community facilities and programs to serve resident needs, enhance the quality of community life, and contribute to an overall positive business environment. Monitor and ensure the availability of necessary community services.

Schedule: On-going

Responsible Department: City Manager's Office

C. Target and Attract New Businesses

Business development in Hercules has lagged behind the rapid residential growth, causing a deficiency in the availability of goods and services needed and desired by residents. The results of the Hercules Household Survey show that Hercules residents are generally supportive of new business development which will make these goods and services available in the community.

Policy Statement: The City of Hercules will identify business types with potential for development in Hercules.

Program: Contract for the completion of a comprehensive market analysis to form the basis for the development of an on-going marketing program.

Schedule: 1991

Responsible Department: City Managers' Office, Planning Department

Policy Statement: The City will actively seek new business development opportunities and will actively promote the community as a place to do business.

Program: Develop an on-going marketing program targeted to the opportunities identified through the market analysis.

Schedule: On-going

Responsible Department: City Manager's Office

D. Directly Participate in Development Activities

Several resources are available to the City and the Redevelopment Agency to actively encourage and participate in business development activities. These might include participation in business ventures, use of development agreements, and use of redevelopment.

1. Development Review

Policy Statement: The City of Hercules will carefully evaluate business development proposals in order to completely assess the proposed project's net impact to the overall fiscal condition of the City.

Program: Develop a comprehensive framework for review of development proposal to include a fiscal impact analysis and criteria for encouragement of specific development opportunities.

Schedule: On-going

Responsible Department: City Manager's Office, Planning Department

2. Development Agreements

Policy Statement: The City of Hercules recognizes the role and value of development agreements in encouraging desired business development. The City also recognizes the potential benefit to business interests in that a development agreement can provide opportunities to mitigate the risk derived from uncertainty in the development process. The City will consider use of a development agreement in situations where it can clearly be demonstrated that a strongly positive benefit will be obtained by the City.

Program: Develop guidelines and criteria for use of development agreements to attract development and provide benefit to the City.

Schedule: Complete in 1991; Use on-going

Responsible Department: City Manager's Office

3. Redevelopment Agency:

Policy Statement: The City of Hercules recognizes that redevelopment may offer opportunities for attracting desired business development and that the project scope of the Redevelopment Agency's activities may be modified to enhance economic development.

Program: Review and evaluate the potential for modification of the Redevelopment Agency work program to focus on attracting economic development.

Schedule: On-going

Responsible Department: City Manager's Office.

E. Regional Interaction

As part of Contra Costa County, and the Bay Area, economic development in Hercules can affect neighboring cities and counties. In addition, policies or actions undertaken by other cities, counties, or the State may impact the City's ability to achieve economic development goals. Therefore, this Element includes policies and programs to respond to regional issues.

1. Transportation on Regional Routes

Traffic and congestion on regional routes in the Bay Area continues to increase, and regional routes in Hercules are no exception. A series of committees and task forces has been established in the past to respond to transportation issues, and new committees and programs can be expected in the future.

Policy: The City will work cooperatively with other agencies to reduce congestion on regional traffic routes without impairing the long term ability of the City to provide services.

Program: The City will continue actively to promote and participate in transportation planning for regional routes through the West Contra Costa Transportation Advisory Committee, its technical advisory committee, the Contra Costa Transportation Authority, and other regional transportation bodies.

Schedule: On-going.

Responsible Department: City Manager's Office, Planning Department, Engineering Department.

Program: The City will adopt a master plan and program for improvements to regional routes within and adjacent to the City of Hercules.

Schedule: 1991.

Responsible Department: Engineering Department

2. Sphere of Influence

Existing development adjacent to the City under County jurisdiction impacts City services in a number of ways. City Police provide either first response or backup response for the County Sheriff (through mutual aid agreement), and non-residents enjoy City parks and other open space areas. Additional development in adjacent unincorporated areas could exacerbate this situation.

Policy: The City will pursue annexation of the unincorporated areas within its Sphere of Influence to control development of these areas so that City service capability is not adversely impacted.

Program: Secure approval of Franklin Canyon Golf Course annexation (including environmental review, and Local Agency Formation Commission approval). Prepare a Specific Plan for the remainder of the Sphere of Influence. Pursue annexation of other properties in the Sphere of Influence, as may be requested by the property owners.

Schedule: Annexation: 1991 and Specific Plan: 1992.

Responsible Department: City Manager's Office, Planning Department

3. Air Quality

Air quality has become a critical issue for new development and quality of life in the Bay Area. Regulation by the Bay Area Air Quality Management District and the California Air Resources Board may constrain the City's economic development program by increasing the cost of doing business in the Bay Area.

Policy Statement: The City will assist in the improvement of air quality as one part of "quality of life."

Program: The City will monitor air quality programs at the regional and State level to help insure that a balance is maintained between air quality and other quality of life issues, and will review new development to ensure that adopted air quality standards are not violated.

Schedule: On-going

Responsible Department: Planning Department

4. Housing

Please refer to the Housing Element for a discussion of the City's role in resolving the regional housing problem in the Bay Area. Unfortunately, under the current property tax structure in California, residential development does not generate sufficient revenue to fully fund its service requirements. While the City acknowledges its portion of the responsibility to resolve the housing problems in the Bay Area, the long-term financial viability of the City requires that non-residential designated property not be converted to residential use. This does not eliminate the potential for consideration of mixed use (housing and commercial) in the City.

5. Solid Waste

While the disposal of solid waste is ultimately a State-wide problem, siting a new landfill in Contra Costa County has been drawn out over a number of years. It now appears that the County may designate one or more landfills; at this writing, these decisions are not final.

Policy Statement: The City of Hercules will continue to work with other cities in the County to site one or more new County-wide landfills, and to implement the requirements of Assembly Bill 939.

Program: The City will continue to support the West County regional effort to establish a transfer station for municipal solid waste, and implement AB 939.

Schedule: On-going

Responsible Department: City Manager's Office

6. Hazardous Waste

Please refer to the Hazardous Waste Management Plan for discussion of City policies and programs for the management of hazardous waste.

F. Private Development

As discussed in the Goals and Objectives (Chapter II), a successful economic development program must include a clear statement of the City's

expectations for new privately-sponsored development. Following from the vision of a balanced community, the City must designate areas for non-residential uses/activities, and state clearly its expectations for development intensity, long-term use, and other development criteria. It must then consistently apply these criteria through a fair and open process.

1. Development Policies and Criteria

Policy Statement: The City shall clearly state its intent, expectations, and evaluation criteria for new development.

Program: Complete a market study to identify opportunities for new non-residential development in Hercules (development "niches").

Schedule: 1991

Responsible Department: City Manager's Office, Planning Department

Program: Update the Land Use Element, including identification of preferred areas for retail, commercial, and industrial land uses.

Schedule: 1991

Responsible Department: Planning Department

Program: Revise/Update the Zoning Ordinance to implement revised Land Use Element.

Schedule: Begin: 1992, following update of Land Use Element

Responsible Department: Planning Department

2. Development Review Process

Policy Statement: The City shall establish and publicize a development review process that includes analysis of all relevant issues in a timely manner, so that development applications can be presented for final action without undue delay.

Program: Reevaluate and revise City application review procedures to establish a centralized, "one-stop" permitting information center, and to establish reliable expectations for permit review schedules.

Schedule: March 1991

Responsible Department: City Manager's Office, Planning Department, Public Works Department (Engineering and Building Divisions)

Program: The City shall periodically review permit application requirements and review procedures, and revise as warranted to resolve problems or "bottle-necks".

Schedule: On-going

Responsible Department: City Manager's Office, Planning Department, Public Works Department (Engineering and Building Divisions)

IV. IMPLEMENTATION

A. Coordination

The Economic Development Strategy Plan was developed as a planning and policy resource to guide the long-term efforts toward economic development and financial self-sufficiency for the City. Financial self-sufficiency is highlighted in the Strategy Plan as a necessary prerequisite for maintaining the quality of life. The Strategy Plan identifies a multifaceted approach to the achievement of the City's objectives. Implementation of the Plan will involve all City departments and will require a high level of coordination and management.

Coordination and oversight of the economic development programs identified in this Element will occur through the City Manager's office to ensure effective coordination among departments. The City Manager is responsible for the on-going oversight of departmental operations and implementation of City Council policy. The Assistant to the City Manager provides day to day management of economic development activities. As identified in the Element programs section, individual City departments will be responsible for project assignments and for specialized aspects of the overall economic development programs.

B. Review/Update Element

The major determinants of the Economic Development "environment" are constantly changing. In particular, local market conditions continue to evolve (partially in response to national economic trends), and regional and environmental issues are constantly changing. In addition, the City will gain experience in economic development through the performance of the programs identified in Chapter III, and will gain new insights into the benefits and impacts of economic development in Hercules.

In response, the City Economic Development Program includes an evolutionary component. The City staff will continue to monitor and report to the City Council regarding opportunities for constraints or economic development. Such reports will be made, at minimum, once-a-year through the budget preparation process, and may include recommendations to amend this Element. In addition, a full review and update of this Element will be scheduled no later than 1994. At that time, the City Council will fully review the successes (and failures) of the policies and programs described in Chapter III, and will establish new policies and programs to further the goal of establishing a balanced, vital, and fiscally-sound City.

The Task Force adopted this finding in recognition of regulations adopted by the Bay Area Air Quality Management District that do not allow new businesses to cause an increase in air pollutant emissions.

**GROWTH MANAGEMENT ELEMENT
OF THE GENERAL PLAN**

**APPROVED BY THE CITY COUNCIL
SEPTEMBER 22, 1998**

X: GROWTH MANAGEMENT ELEMENT

I. INTRODUCTION

The City of Hercules strives to sustain a desirable life-style by, in part, providing well designed and maintained local streets and public facilities and the services that they support. City economic development planning has shown that maintaining this life-style will require both developing the non-residential sector of the community and continuing to provide high quality public facilities and services. In fact, additional non-residential revenue will provide the revenue to maintain these facilities. This Element integrates performance standards for these facilities into the development review process so that new development helps to maintain and improve the quality of life in Hercules.

A. Background and Purpose

Measure C: In 1988, the voters of Contra Costa County approved the Contra Transportation Improvement and Growth Management Ordinance (Measure C). This measure intends to improve the quality of life in Contra Costa County by reducing congestion on major streets and highways, and by keeping new growth in balance with the capacity of public facilities. This measure increased the County-wide sales tax by 1/2 cent and allocated the revenue from this increase to a specified list of transportation improvement projects and programs. It also includes an innovative program to upgrade maintenance of local streets and to promote growth management.

The measure allocates 18% of the sales tax increase revenue to cities in the county that implement a growth management program in compliance with Measure C requirements. This funding has become known as "Return-to-Source" funding. The purpose of this Element of the General Plan is to incorporate the spirit and the requirements of the Measure C Growth Management Program into the Hercules General Plan, and to qualify the City of Hercules for receipt of Return-to-Source funding.

Measure C specifies eight mandatory components for a "full-compliance" growth management program including adoption of a Growth Management Element of the General Plan. It states further that this Element must include:

- traffic level-of-service standards for local streets (or "Basic Routes");
- performance standards for capital facilities for six public services (police, fire, parks, sewers, water and flood control); and,
- policies and programs to achieve and maintain these standards. Underlying this approach is the expectation that new development will pay for the facilities required to serve that development.

Economic Development: This Element expands upon the fundamental goals in this General Plan for new development. The Preamble calls for the City to develop as a balanced community, with

a mixture of residential, commercial, office, industrial, and public uses . The City's Economic Development Strategy Plan (adopted in June, 1990) points out that the quality of life in Hercules is dependent on the adequate provision of economic opportunities and City services.

At present, achieving this vision of a balanced community means promoting the development of non-residential areas. The City now provides a variety of housing opportunities and residentially-oriented services, but employment and shopping opportunities are severely limited. Therefore, the intent of this Element is not to limit new development, but to manage new development in order to maintain, and enhance the quality of life in Hercules.

B. Authority

California law authorizes cities and counties to adopt general plan elements in addition to the seven required elements. Section 65303 of the California Government Code states,

" The General Plan may include any other elements or address any other subjects which, in the judgment of the legislative body, relate to the physical development of the county or city."

As discussed above, this Element is included in the General Plan to establish City goals and policies to accommodate new development consistent with traffic service standards and the performance standards for public facilities.

C. Relation to Other Plan Elements

As one of the adopted Elements of the City's General Plan this Element will help achieve the fundamental City goals of providing a desirable quality of life. In addition, the policies in this Element help to define the goals in other Elements by providing quantified standards for public facilities. New development will be evaluated for conformance with these standards, as well as the goals and policies in the other Elements.

D. Organization

The structure of this Element is based on the model element published by the Contra Costa Transportation Authority. The next section provides the goals, objectives and policies for the traffic standards. The following section presents the goals, objectives and policies for the six other types of public facilities.

II. TRAFFIC SERVICE STANDARDS AND PROGRAMS

A. Introduction

Measure C requires a qualifying Growth Management Element to include traffic level of-service (LOS) standards for local streets (those streets not designated as "regional routes") and policies and programs to achieve and maintain those standards. This section presents those standards for the City of Hercules. Implementing documents for Measure C provide a system for establishing

LOS standards for signalized intersections on local streets based on surrounding land use. These documents also indicate that traffic service standards for regional routes will be established in Action Plans which are being developed by the regional transportation planning committees. These standards will allow the City to evaluate the traffic impacts of new development (through project traffic studies) and to verify adequate traffic operations (through annual review of key City intersections).

Measure C standards apply to signalized intersections because current traffic engineering analysis methods do not provide an estimate of overall LOS for unsignalized intersections.

B. Definitions

Measure C provides two separate programs for managing traffic operations on "Routes of Regional Significance" and "Basic Routes." Routes of Regional Significance are designated by the Contra Costa Transportation Authority (CCTA) in consultation with affected cities, the County, and the regional transportation planning committees. In general, these routes connect two or more regions of the county, or connect the county to other counties. Measure C assigns planning responsibility for Routes of Regional Significance to regional transportation planning committees, including the West Contra Costa Transportation Advisory Committee (WCCTAC) in West County. WCCTAC includes the five West County cities, plus Contra Costa County, and is developing an Action Plan (including traffic service standards and impact mitigation measures) for these routes. Each West County city and the county must participate in WCCTAC and implement the Action Plan in order to remain in compliance with Measure C. CCTA has designated three Routes of Regional Significance in Hercules: I-80, SR 4, and San Pablo Avenue.

Streets not designated as Routes of Regional Significance are labeled under Measure C as "Basic Routes", and each agency has responsibility for traffic operations on these streets in its jurisdiction.

Measure C provides LOS standards for Basic Routes for different land use types in recognition that different streets serve different functions. Two of these types are found in Hercules, and are defined as follows.

- ◆ Suburban - Areas designated in the General Plan for low and medium density single family homes, low density multi-family residences, low density neighborhood and community oriented commercial/industrial uses, and other accompanying uses. This land use type encompasses most of the residential areas in Hercules (except where residential development adjoins commercial or industrial development).
- ◆ Urban - Areas designated in the General Plan primarily for multi-family housing, with smaller areas designated for high density single family homes; low to moderate density commercial/industrial uses and many other accompanying uses. This land use type encompasses the commercial and industrial areas of Hercules.

In addition, segments of Bayberry and Sycamore function more like streets in a "Major Commercial Center, " because these street segments serve as the only connection between the east and west sides of the City, and the I-80 on- and off-ramps .

C. Goals

The following goals are adopted for traffic operations in the City of Hercules:

1. The City shall maintain traffic operations on streets that are designated as "Basic Routes" at the standard described below.
2. The City shall participate in the West Contra Costa Transportation Advisory Committee regarding traffic operations on Routes of Regional Significance, and shall help meet the goals and service standards for these routes by implementing the Action Plans for those routes, as adopted by the City and Contra Costa Transportation Authority.
3. New development shall be required to pay its fair share of the cost of improving existing City streets so that compliance with the designated LOS is maintained .
4. New development shall be required to pay its fair share of the cost of improving regional routes so that compliance with the service standard specified in the Action Plan (when adopted) is maintained.

Additional goals regarding the City circulation system are contained in the Circulation and Scenic Highway Element.

D. Traffic Service Standards for Basic Routes (Local Streets)

1. Traffic operations on City Basic Routes shall meet the following standards.

LOS High-D to Low-E (maximum v/c ratio is 0.94)

- Sycamore Avenue (from Bayberry to San Pablo Avenue)
- Bayberry (from I-80 ramps to Sycamore)

LOS "High" D - (maximum v/c ratio is 0.89)

- Sycamore Avenue (SR-4 - Bayberry)
- Refugio Valley Road (Sycamore - Redwood / Falcon)
- Alfred Nobel Drive
- Linus Pauling Drive
- James Watson Drive
- John Muir Parkway

LOS "Low" D - (maximum v/c ratio is 0.84)

- All other Basic Routes (that is, except Routes of Regional Significance).

Compliance with these standards shall be determined through preparation of a traffic study for each proposed project that would generate 100 or more peak hour trips (morning or evening). This study would estimate the existing LOS and project the future LOS (seven years after scheduled project occupancy) at all signalized intersections that would be affected by the proposed project. (Arterial streets are shown on the Circulation Plan in the Circulation Element.) The calculation of the future LOS will take into account all existing, approved and proposed projects (for which entitlement applications are complete when the traffic study is begun) and all existing and programmed street and highway improvements.

At the intersection of Bayberry and Sycamore a LOS range is established to require careful consideration of the benefits of a project that would cause the LOS to reach Low-E. Projects that would not cause an exceedence of LOS High-D would be reviewed through the normal process. Projects that could result in Low-E would require approval by the City Council. The City Council could approve such projects if it finds that the project provides substantial benefit to the City or the community through either the creation of substantial jobs, creation of a substantial long-term revenue potential to support City services, or the provision of a substantial amount of affordable housing. Projects for which this finding could not be made would not be approved through this process.

2. Objectives and Standards for Regional Routes in Hercules will be included in the Action Plan for those routes, and will be incorporated into this Element upon completion and adoption.
3. Measure C allows for a "Finding for Special Circumstance" at intersections on Basic Routes where physical or environmental conditions make further improvements to the intersection infeasible or inappropriate. Such a finding is subject to ratification by the Contra Costa Transportation Authority. Approval of a finding for a particular intersection will include alternative mitigation; projects that will generate traffic that will impact such an intersection shall be required to implement or participate in the alternative mitigation.

E. Implementing Policies and Programs

1. The LOS standards in this Element will be used to evaluate the traffic impacts of new developments, and no application shall be approved which may cause a violation of these standards unless either:
 - a. Improvements that will mitigate the projected LOS impact are programmed in the City's or Redevelopment Agency's Capital Improvement Program; or,
 - b. A Finding of Special Circumstances has been made for the intersection; or,
 - c. Improvements will be made by a project sponsor as part of a project.
2. The City shall develop and implement a mitigation program to insure that new development pays its fair share of the cost of maintaining adequate operations on the Basic Routes and the Routes of Regional Significance.

3. As mentioned above, a traffic study shall be performed for any proposed project that may generate 100 or more vehicle trips during the morning or afternoon peak hour. This traffic study shall be prepared in compliance with the technical guidelines issued by the Contra Costa Transportation Authority, and shall be funded by the project sponsor under the direction of City staff.
4. Mitigation measures and conditions of project approval may include payment of fees to fund improvements on Basic Routes or Routes of Regional Significance. Fees for improvements to Basic Routes shall be deposited in a separate City Traffic Mitigation Fund. Fees for improvements to a regional route shall be handled in accordance with the Action Plan for the affected regional route.
5. Improvements to Basic Routes shall be programmed through the City's Capital Improvement Program.
6. Improvements to a Route of Regional Significance which are sponsored by the City of Hercules shall also be programmed through the City's Capital Improvement Program.
7. Improvements to a Route of Regional Significance that are not sponsored by the City of Hercules shall be programmed by the sponsoring agency, and may be acknowledged in the City's Capital Improvements Program.
8. The City shall continue to participate actively (at both the staff and the policy level) in the West Contra Costa Transportation Advisory Committee and the Contra Costa Transportation Authority. Participation in these agencies shall include, but may not be limited, to full implementation of adopted Action Plans for Routes of Regional Significance in order to promote acceptable traffic movement on these routes. In the event that problems / issues cannot be resolved through discussion among the affected parties, the City will participate in CCTA's conflict resolution process.
9. The City shall report annually regarding compliance with the Measure C Growth Management Program, or as may be requested by the Contra Costa Transportation Authority.
10. The City shall adopt and implement a Transportation Demand Management Program, including the required policies adopted by the Contra Costa Transportation Authority. Such a program may be jointly implemented in western Contra Costa County by the five cities and the County through the West Contra Costa Transportation Advisory Committee.

III. PERFORMANCE STANDARDS FOR CAPITAL FACILITIES

A. Introduction

The Preamble to this General Plan calls for development of a balanced community; this section states performance standards to define "balance" with regard to capital facilities. These facilities

provide the physical basis for public services provided by the City, the Rodeo-Hercules Fire Protection District and the East Bay Municipal Utility District (water). These performance standards will be incorporated into the development review process, and will be used to insure that new development does not exceed the capacity of capital facilities for the six cited services without providing funding for improvements to accommodate the new demand. Improvements or expansions to these facilities will be programmed through the City's Capital Improvement Program and budget, or the budgets of the service-providing agencies

Measure C requires adoption of locally-determined performance standards, maintained through capital projects, for the following services:

1. Fire
2. Police
3. Parks
4. Sanitary Facilities (sewer)
5. Water
6. Flood Control.

Measure C states, "the performance standards should take into account fiscal constraints, and how the standards are to be applied in each jurisdiction's development review process." The purpose of this section is to comply with that requirement, and to more fully integrate facility planning into the City's development review process.

This Element also includes a performance standard for stormwater drainage facilities to respond to federal requirements to control pollution in stormwater run-off.

B. Goals

The Preamble to this General Plan states, as a primary objective of all the General Plan Elements, to "provide a functional and compatible arrangement of residential commercial, industrial, public uses, and open spaces." The performance standards in this Element are intended to help achieve this goal and the following goals:

1. Provide adequate service capacity in public facilities to support the provision of public services to existing and new development.
2. Develop facilities that meet specific identified needs, while placing strong emphasis on facilities that can adapt to the needs of changing activities and programs.
3. Coordinate City projects with plans of other agencies who could contribute to the success of projects in Hercules and surrounding areas.

C. Existing Facilities

1. Fire District Service: The Rodeo/Hercules Fire Protection District provides fire, emergency medical and related services in the City. The District provides primary response in the City from the station at 1680 Refugio Valley Road. This 3-bay station provides garage space for

up to six fire engines/ trucks. It also provides living and sleeping areas for three-person fire crews operating 24-hours-per-day. Facilities are provided for both male and female fire fighters. Back-up response is provided from the Rodeo station, which includes two equipment bays and living/ sleeping accommodations for three person-crews.

The Hercules station was opened in 1991, and also serves as the headquarters for the District. It was designed and built by the City on City-owned land, and paid for with City and developer funds. The station is owned by the City and is leased to the District.

2. Police: Police service is provided by the Hercules Police Department. The Department operates out of the Hercules City Hall. Existing facilities include investigative and administrative offices, evidence storage, detention area, and related facilities. Police dispatch is provided jointly with the City of Pinole through the Pinole Police Department.
3. Parks: The City maintains one community park, four neighborhood parks, and two mini parks; and plans to develop a second community park and two neighborhood parks. The community parks include Refugio Valley Park, and the planned Waterfront Park. Refugio Valley Park encompasses Refugio Lake and surrounding facilities (near the intersection of Refugio Valley Road and Pheasant Drive), the Linear Park, along Refugio Creek (on the north side of Refugio Valley Road), and the Community and Swim Center (near the intersection of Refugio Valley Road and Redwood Road). These facilities encompass a total of 55 acres. The planned Waterfront Park is located along San Pablo Bay near the intersection of Railroad Avenue and Santa Fe. At present, it encompasses 7.14 acres, most of which is owned by the State of California and is leased to the East Bay Regional Parks District. The Land Use Element and Waterfront Park Plan (1984) call for expansion of this park along the Bay front. The five neighborhood parks encompass about 31 acres. The two mini parks, Railroad Mini Park and Beechnut Mini Park total 2.5 acres.

The City also maintains systems of trails and open space areas, distributed throughout the City. These open space areas encompass a total of approximately 832 acres. The open space areas and the City parks together account for approximately 1/5 of the total land area within the existing City limits. The homeowners' association for the Refugio Valley Ranch development owns about 320 acres of the permanent open space. It is anticipated that another 20 acres of open space will be provided by the Lower Refugio Creek Open Space Corridor.

4. Sanitary Facilities (Sewer): The City is served by two sewage treatment plants, the Pinole-Hercules plant and the Hercules Sewage Treatment plant. Existing capacity of the Pinole-Hercules plant is approximately 3.8 million gallons per day (mgd) average wet weather flow (AWWF),¹ and the existing capacity of the Hercules plant is about 0.35 mgd. The entire capacity of the Hercules plant is used exclusively by the City of Hercules. The City, as part of the assessment district for the Pinole-Hercules plant, has a current capacity

¹ AWWF is the average flow during wet weather, including the effects of rainwater infiltrating into the system.

and allocation of 2.04 mgd of the total capacity of this plant. Because the Pinole-Hercules plant operates at less than design capacity, Hercules currently has access to about 1.9 mgd of treatment capacity at that plant. The total current wastewater treatment capacity owned by the City of Hercules is 2.4 mgd. About 2.3 mgd is currently available. The remaining capacity at Pinole is expected to be available following several minor capital improvements that are planned for the facility. Both plants provide secondary treatment, as required by State regulations. Treated effluent is pumped through a force-main and gravity flow system to the site of the Rodeo Sanitary District Treatment Plant. Here it is combined with effluent from the Rodeo Treatment Plant, and then discharged through a deep-water outfall into San Pablo Bay.

5. Stormwater Drainage: The City maintains stormwater drainage facilities in the incorporated area. Stormwater is collected and conveyed to existing creek channels or San Pablo Bay.
6. Water: The East Bay Municipal Utility District (EBMUD) provides water service in the City of Hercules. EBMUD's Maloney pressure zone provides services to properties up to an elevation of 200 feet above sea level. Water mains are extended, and new connections provided when properties are developed. The Mendocino Pressure Zone serves elevations between 200 - 400 feet msl, and is the primary potable water source for recent residential development in the City. Storage systems for elevations between 200 - 400 feet msl are currently nearing capacity. Both zones provide adequate potable water supply and pressure to the City.
7. Flood Control: Existing City ordinance requires new development to provide on-site flood protection (see Hercules Municipal Code Title 10, Chapter 7 (Flood Damage Prevention)). Flood Hazard areas are defined in this ordinance according to designations on the federal Flood Insurance Rate Map, which is generally based on the 100-year flood.

D. Proposed New Facilities Improvements

1. Fire District Service: New fire stations will be planned as needed to serve new development within the city limits and the sphere of influence.
2. Police: Expanded police facilities will be planned as needed to serve new development within the city limits and the sphere of influence.
3. Parks: Two new neighborhood parks are planned, Forest Run Park and the School Park, which would add about 11 acres of parkland within the City. In addition, a new neighborhood park will be planned for the Franklin Canyon Golf Course property; on-site trails will connect to the regional trail system. An additional neighborhood park may be located in one of the other properties in the Sphere of Influence, if needed, to serve new residences at those properties.

4. Sanitary Facilities (Sewer): The City is planning a new treatment plant to replace the existing Hercules plant. The plant may provide tertiary treatment and provide reclaimed water to replace potable water for industrial use and landscape irrigation.
5. Stormwater Drainage: Facilities to meet NPDES requirements will be incorporated into construction plans and will be installed as part of property development.
6. Water: Facilities to provide adequate water service to undeveloped properties in the City and the Sphere of Influence, (including mains, service pipes and reservoirs) will be installed as part of property development. They will be designed to conform with EBMUD requirements and will be funded by project sponsors.
7. Flood Control: Flooding hazards in the area west of San Pablo Avenue will be resolved by installing flood control improvements along Refugio Creek. These improvements will be installed prior to or as part of development of the affected properties. On-site retention will be incorporated into all development plans, as needed, to avoid causing down-stream flooding during a 100-year storm.

E. Performance Standards for Capital Facilities

While Measure C requires the adoption of performance standards for capital facilities, it does not specify mandatory standards, or the format of these standards. Each agency's standards should reflect the ability of the agency to provide and maintain capital facilities, consistent with other uses of scarce revenues. The following paragraphs present the standards for the City of Hercules.

Changes in the City's fiscal situation (such as further revenue "take-backs" by the State) may require adjusting or reducing these standards in order to maintain a balance between funding for these capital facilities and funding for other facilities and services. The City would consider such revision through an amendment to this Element.

1. Fire District Service: Fire Station(s) shall be located in the City so that five minutes emergency response time may be achieved by first response units for 90% of all emergency calls. Fire Stations shall be sized to accommodate a minimum of two (2) engines/trucks and three-person, 24-hour crews.
2. Police: Office and supporting facilities shall be provided in a central, headquarters facility. Communication equipment (including repeater stations) shall be provided to allow communication between dispatch and police units throughout the service area.
3. Parks:
Neighborhood Parks: A minimum of 1.75 acres of neighborhood parks shall be provided for each 1, 000 residents.
Community Parks: A minimum of 3.25 acres of community park space shall be provided for each 1, 000 residents.

Open Space: A minimum of 34 acres of open space (public and private combined) shall be provided for each 1,000 residents.

4. Sanitary Facilities (Sewer): Capability to transmit and treat wastewater from all residential and non-residential developments to standards set by the Regional Water Quality Control Board.
5. Stormwater Drainage: Meet federal NPDES requirements for stormwater runoff .
6. Water: Capability to provide potable water supply to all residential and nonresidential developments.
7. Flood Control: All new structures shall be located outside the Flood Zones A & B as designated by the Flood Insurance Rate Map (prepared by the Federal Emergency Management Agency (FEMA)); or, insure that the finished floor elevation is at least 1 foot above the flood elevation as determined by FEMA.

Development of any property shall not significantly increase the flooding potential at downstream areas, or otherwise significantly impact or aggravate a flooding problem at downstream properties.

F. Implementing Policies and Programs

1. The City shall review all new development plans for conformance with the performance standards in this Element. The City will approve a development application only after making findings that one or more of the following conditions are met:
 - a. Assuming participation in adopted mitigation programs, performance standards will be maintained following the project occupancy; or,
 - b. Because of the characteristic of the development project, project specific mitigation measures are needed in order to insure maintenance of standards, and such measures will be required of the project sponsor; or,
 - c. Capital projects in the Capital Improvements Program (or planned by service-providing special districts) will result in maintenance of performance standards.
2. The City will establish and implement a development mitigation program to insure that new growth is paying its share of the cost associated with the maintenance of these standards.
3. The City shall require all new development to contribute to or participate in the improvement of the above-mentioned facilities and systems in proportion to the demand generated by project occupants and users.
4. Fees collected pursuant to these policies shall be deposited in special funds, and shall be used to support construction or improvements to the above mentioned facilities improvements, as programmed through the City's Capital Improvement Program and budget.

U.C. BERKELEY LIBRARIES



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